

Request For Proposals

Bi-State Region Aerial Mapping Project Spring 2019

Published November 30, 2018

By: Bi-State Regional Commission

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Section 1: General Information

1.1 Project Overview

The Bi-State Regional Commission (Bi-State) a regional Council of Governments on behalf of a multi-jurisdictional, multi- agency consortium is coordinating a joint acquisition of spring 2019 aerial photography, LiDAR, and topographic mapping services. The Consortium is requesting proposals from professional mapping firms. Selection of the final Vendor will be done as a “modified” Qualification Based Selection (QBS) process, meaning that cost will be factored into the final selection.

The 2019 project consortium consists of the following public agencies:

• Iowa Jurisdictions

- Scott County, IA
- City of Davenport, IA
- City of Bettendorf, IA
- Muscatine Area Geographic Information Consortium (MAGIC) – Muscatine County, IA; City of Muscatine, IA; Muscatine Power & Water Utility

• Illinois Jurisdictions

- Rock Island County, IL
- Village of Carbon Cliff, IL
- Village of Coal Valley, IL
- Village of Milan
- City of East Moline, IL
- City of Moline, IL
- City of Rock Island, IL
- City of Silvis, IL
- City of Cambridge, IL (Henry County, IL)
- City of Geneseo, IL (Henry County, IL)

The general coordination is being provided by the Bi-State Regional Commission (Bi-State) a regional Council of Governments. The Commission and jurisdictions together hereinafter are referred to as the “Consortium”.

Each consortium member reserves the right to negotiate their respective contracts with the Vendor selected for the project. Individual Cost Proposal forms are included in Section 10.

1.2 Purpose

The specifications listed in this request for proposals (RFP) are intended to be the basis for the individual contracts with each of the Consortium agencies. The Vendor shall provide all labor, materials, supplies, equipment, transportation, management and other items required to complete the project based on the mapping options selected by the Consortium agencies.

1.3 RFP Schedule

RFP issued to Vendors: November 30th, 2018

Clarification Deadline: December 14th, 2018

Answers posted: December 21st, 2018

Proposals Due: January 7th, 2019

Vendor Interviews: To be determined

The above dates are subject to change at the option of the Consortium.

Please see Section 2 for specific submission guidelines and requirements.

Section 2: Submission Guidelines and Requirements

2.1 Proposals

1. Each proposal shall describe the approach to satisfying each item in the Scope of Services in sufficient detail to enable the Consortium to evaluate and compare it to other proposals. All proposals should include the following information and any other information the respondent deems pertinent to the project.
2. Describe the techniques and technologies that will be used to fulfill the Scope of Work.
3. Describe how much and what type of involvement you expect from the individual Consortium agencies to complete the project.
4. Prepare a cost for each item listed on the Cost Proposal Forms.
5. Proposing alternate methods, technologies, and/or products included in proposals that will improve project quality or reduce project cost are encouraged.

2.2 Basis for Selection

MINIMUM EVALUATION CRITERIA

Proposals will be evaluated by the following Evaluation Criteria:

- Completeness of your response to this RFP.
- Experience and performance on similar projects.
- Qualifications of personnel assigned to this project.
- Methods.
- Delivery Schedule.
- Cost.

The evaluation criteria have not been listed in any priority or weighting and are meant for informational purposes only. The Consortium reserves the right to make its selection on any subjective criteria it deems appropriate.

2.3 Bid Bond

Each proposal must be accompanied by a certified check, cashier's check or bid bond in the amount of five percent (5%) of the bid, made payable to the Bi-State Regional Commission. Proposals without a bid bond will be returned. An unsuccessful Vendor's bid bond will be returned not later than thirty (30) days after the selection of a Vendor.

2.4 Location of Work Performed

All work performed for this project shall be done within the United States of America, i.e., the conterminous 48 states, Alaska, and Hawaii. It will not be acceptable for any portion of the project to be done in a foreign country. The successful Vendor will be required to provide a letter to the Bi-State Regional Commission stating; "No foreign labor or off-shore production services will be used to produce any of the products associated with this contract."

2.5 Equipment

The Vendor must include in the proposal a complete list of all equipment proposed for use on this project.

2.6 Personnel

The Vendor must provide a list of the key personnel who will be involved in the project, including the overall project manager, and the managers responsible for the QA/QC on orthophoto production, LiDAR acquisition, DTM processing and planimetric mapping compilation. The names and contact information for the project managers shall be included in the Vendor's response to the RFP.

The contracting project manager and project supervisors should document their experience in undertaking aerial mapping projects similar in scale, scope and complexity to this project.

2.7 Subcontractors

The Vendor must identify all subcontractors proposed and their roles in the project, providing for each subcontractor a brief corporate history describing business locales, types of services and products offered, the number of years in business, and the number of employees.

2.8 Project References and Experience

The Vendor must have successfully completed three projects similar in scope and complexity to this RFP within the last four years. Reference projects shall include the production of color digital ortho-rectified imagery, LiDAR acquisition and topographic mapping. Vendor shall provide a brief project description including the project cost and project references with contact information for each of the three reference projects.

2.9 Alternates

The specifications contained in this request for proposal (RFP) are intended to be the minimum required to meet the project objectives and each respondent should submit a proposal that responds to these specifications. Proposals that include alternate methodologies and/or increased quality are encouraged if such proposals can conclusively demonstrate that the resulting product will meet or exceed the product quality defined in the RFP. Any alternate proposal should be listed separately from the base RFP and be described in detail.

2.10 Responses to this Proposal

1. All information must be complete and legible. An authorized representative of the firm must sign the original proposal in ink. This RFP and the contents of the successful proposal will become a part of the contract awarded as a result of this solicitation.
2. Proposals must be sealed and submitted in an envelope that clearly states, on the outside, "Bi-State Aerial Mapping Project – Spring 2019, Aerial Mapping Proposal". The name of the firm and contact person must also be listed on the outside of the envelope. Any restrictions on the use of data within proposals must be clearly stated in the proposal itself. Non-disclosure cannot be guaranteed after the selection stage of this procurement due to public record laws.
3. Please submit one signed original, one hardcopy, and one complete digital copy in PDF file format to:

Denise Bulat, Director
Bi-State Regional Commission
1504 Third Avenue, P.O. Box 3368
Rock Island, IL 61204-3368
4. Proposals are due at 1:00PM CST on Monday January 7th, 2019.
5. Proposals received after the deadline will not be accepted. Proposals may be withdrawn and/or modified in writing prior to the submission deadline. Request for withdrawal must be in writing by the contact person named on the outside of the envelope. Proposals that are resubmitted must be sealed and received prior to the submission deadline. Each respondent may submit only one proposal.
6. The proposals shall be binding upon the respondent if accepted by the Consortium agency within 45 calendar days of the date they are due. Negligence on the part of the respondent in preparing the proposal confers no right of withdrawal after the time fixed for the submission of proposals.
7. The Vendor must identify what elements if any, of the project will be subcontracted and the name of the subcontractor(s). The Vendor awarded a contract as a result of this RFP is responsible for the quality and timeliness of the subcontracted work elements.

8. The Consortium reserves the right to reject any or all proposals, to waive irregularity in any proposal, to waive any specific requirements set out in the RFP and to select the firm deemed most advantageous to the Consortium. This RFP does not commit the Consortium to pay any cost incurred in preparation of a proposal submitted in response to this request. The Consortium agencies reserve the right to negotiate with any qualified respondent and to cancel this RFP in whole or in part.
9. Acceptance of any proposal will be contingent on signing/entering into a written contract with the individual Consortium agencies.
10. Vendors are to submit questions related to the specific project requirements and contents of proposals in written form only (no phone calls) and submitted by fax, U.S. Mail, or e-mail by 1pm CST on December 14th, 2018. The responses to all questions shall be sent to all Vendors via fax or e-mail by Friday December 21st, 2018. No oral questions will be entertained prior to or after the deadline for written questions specified above. Submit all questions to:

Denise Bulat, Director
Bi-State Regional Commission
1504 Third Avenue, P.O. Box 3368
Rock Island, IL 61204-3368
Email: dbulat@bistateonline.org
Fax: (309) 793-6305

Please do not attempt to contact the staff of any of the agencies participating in this consortium; all inquiries should be submitted through Ms. Bulat as stated above.

Section 3: Aerial Photography

3.1 Scope of Work

1. The Vendor shall acquire new, natural color aerial photography of the project area during the spring flight season of 2019. This photography will primarily be used to produce digital ortho-rectified imagery which will subsequently be used to support computerized geographic information systems and other government mapping applications. In addition to the digital orthos, the project aerial photography will be used to support stereo compilation of planimetric mapping features.

The project scope includes the following key components:

A. Natural Color Aerial Photography.

1. 3,000ft Above Mean Terrain (AMT).
 - a. RGB Ortho-rectified image tiles with 0.25ft GSD pixels.
2. 1,500ft Above Mean Terrain (AMT)
 - a. RGB Ortho-rectified image tiles with 0.125ft GSD pixels.

B. LiDAR with DEM.

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- C. DTM & Contours.
- D. Limited Planimetric Mapping.

3.2 Project Areas

1. The overall project area includes the following counties: Scott and Muscatine Counties in Iowa and Rock Island County in Illinois. Also included are the following cities located in Henry County Illinois: Cambridge and Geneseo. Maps showing the specific coverage areas for each jurisdiction are included in the Attachments. Photo coverage shall be designed to provide “neat model” production of digital ortho-rectified imagery for a minimum of one-quarter mile outside of the ortho tile coverage shown on the maps in Section 11. The coverages in Esri shapefile format are available from the Bi-State Regional Commission by request.

3.3 Aircraft and Crew

1. The Vendor shall be responsible for operating and maintaining all aircraft used in conformance with all governing Federal Aviation Administration regulations over such aircraft. Any inspection or maintenance of the aircraft resulting in missing favorable weather will not be considered as an excusable cause for delay.
2. Preference will be given to Vendors who own the aircraft and aerial camera system(s) used on this project. All respondents must identify the firm that will be acquiring the aerial photography, the relationship that firm has with the Vendor and the ownership of the aircraft and camera equipment to be used.
3. All flight crew members must have two years or more experience flying precise photographic missions for aerial surveys. Individual resumes of flight crew members must be included with proposal.
4. The aircraft furnished shall be capable of stable performance and shall be equipped with essential navigation and photographic instruments and accessories, all of which shall be maintained in operational condition during the period of the contract.
5. Any window or glass interposed between the camera lens system and the terrain shall be optically flat. The camera lens system shall not be in the direct path of any exhaust gasses, effluence or oil from aircraft engines.

3.4 Acquisition Delays

1. The Vendor shall inspect and constantly monitor the photographic coverage and image quality and shall undertake immediate re-flights of areas wherein coverage does not meet specifications. Rejection of photography by the Vendor or a member of the consortium shall not in itself be a reason for granting a delay or of another photo season.

3.5 Environmental Conditions during Image Acquisition

The following weather conditions are a minimum which shall be met or exceeded during the photo missions:

1. *Sun angle.* Photography shall be taken when the sun angle is 30 degrees or greater above the horizon. There shall be no objectionable shadows created by relief or low solar altitude.
2. *Cloud cover.* Images shall be free of clouds and cloud shadows. No photography will be accepted with clouds or cloud shadows appearing on more than 5 percent of the area in any one final ortho-rectified image tile.

3. *Season.* Photography shall be acquired during the leaf-free season in the spring of the year. Deciduous trees must be barren. Acquisition of the color photography shall not begin until after March 15th, 2019.
4. *Turbulence.* Photography will not be taken during adverse conditions when wind and thermal currents are causing excess tilt, crab or drift in the photography.
5. *Haze.* Photography will not be taken when the ground is obscured by haze, fog, or dust.
6. *Snow cover.* Photography will not be taken when snow is present on the ground.
7. *High water.* Photography will not be taken when the ground is obscured by flood water. Streams must be in their normal banks.
8. *Ground conditions.* Weather conditions (such as smoke) that might obscure ground detail shall be the responsibility of the Vendor.

3.6 Aerial Camera

1. The aerial camera used for this project shall be a large format digital mapping camera/sensor designed for stereo vertical aerial photography with electronic forward motion compensation (FMC). The sensor shall provide direct digital capture of 4-band (RGBir) imagery with 12-bit or greater radiometric resolution for each image band. A manufacturer's calibration report shall be submitted with the response to these specifications for each camera system to be used on this project. The absence of a calibration report may be cause for disqualification of the Vendor. Any use of an analog camera must be clearly defined in the proposal including the proposed process, equipment, specifications and current USGS camera calibration.
2. A report detailing the calibration of the sensor system shall be submitted covering each of the following topics:
 - 1) System calibration (focal length, lens distortion, principal point location and radiometric calibration)
 - 2) Bore sight calibration values
 - 3) Sensor-to-GPS-antenna offset determinations. Offset vectors shall be re-determined each time the sensor aircraft's GPS antenna is moved or repositioned.
 - 4) For multiple sensor systems, a minimal value of radiometric quality and verification of radiometric consistency across the collection area.
3. Digital sensor systems must be compatible with precision stereoscopic mapping or softcopy systems and with measurement procedures used in photogrammetric surveys and in preparing accurate orthophotos. If the sensor proposed is not owned by the respondent, a written statement of availability from the equipment owner shall be furnished.
4. Preference may be given to Vendors who demonstrate the capabilities of dedicating multiple aircraft and approved sensor systems to this project.

3.7 Image Acquisition

1. The Vendor shall prepare flight plans for each scale of photography and include the flight plans with their response to the RFP. In addition to the flight plans each Vendor shall include a Digital Image Collection Survey Plan that lists the specific data collection parameters to be used.
2. The photographic survey areas of the project shall be stereoscopically covered by successive and adjacent overlaps of photographs within the usable portion of the field of the lens.
3. Lack of acceptable stereoscopic coverage shall be corrected by re-flights at the Vendor's own expense.

4. Any exposures within the project area with a color balance shift compared to the remainder of the flight line will result in unacceptable exposures.
5. Forward overlap in the line of flight shall average not less than 57% or more than 62% at mean elevation of the terrain, unless otherwise specified. Individual overlaps shall not be less than 55% or more than 68%, excepting the situation where in a forward overlap in areas of low elevation must exceed 68% to attain the minimum 55% forward overlap in adjacent areas of higher elevation.
6. Junction areas between adjoining flight lines shall be covered stereoscopically by both lines (wherever there is a change in direction between two flight lines).
7. Side overlap between adjacent parallel flight lines shall be 30% +/- 10% at the mean elevation of the terrain.
8. Flight line deviation shall not exceed a distance greater than 10% of the width of the coverage of the photograph.
9. While acquiring imagery, the camera shall be compensated for crab of the aircraft, with a resultant error not exceeding 3 degrees.
10. The combined effect of aircraft course corrections, crab and tilt shall result in an apparent crab not greater than 5 degrees on successive photographs. Apparent crab is defined as the angle between the indicated principal point and the conjugate image of the indicated principal point of the adjacent photograph within the same flight line.
11. Maximum speed over ground (SOG) for push broom sensors shall not exceed manufacturer's guidelines. Estimated SOG based on stated project GSDs shall be included in respondent's proposal. No image smear shall be present in the imagery. Departures from flight heights required to produce the desired GSDs shall not exceed +/- 5%.
12. Capture width shall be at least 12,000 pixels across track or greater.
13. Digital sensor shall be capable of simultaneous capture of red, green, blue and near-infrared bandwidths for each exposure.
14. Captured radiometric resolution shall be at least 12 bits/pixel (bpp) for each band/channel
15. End-lap: For frame-type digital cameras, consecutive images in a flight line shall have a minimum end-lap of 60% +/- 5% of the mean image width. For push-broom type digital cameras end-lap should be 100%.
16. Side-lap: Overlap between adjacent parallel flight lines shall typically be 30% +/- 5%; side-lap less than 25% shall be cause for rejection of the imagery.
17. The photo missions shall be executed within the shortest possible timeframe to insure consistent ground and lighting conditions.

3.8 Re-flights

1. Unacceptable aerial photography shall be re-flown at the earliest opportunity, weather permitting by the Vendor at no additional cost to the Consortium, with the re-flight coverage overlapping the accepted photography by at least two stereo models.

3.9 Airborne GPS

1. Airborne GPS technology will be used during the aerial photography missions to reduce the amount of ground control necessary to perform the project. The Vendor shall describe the onboard equipment which it owns and is installed in the aircraft. The type of receivers, number of base stations and base station locations to be used shall be described in the Vendor's response to the RFP. The Vendor shall also list the AGPS data processing software and procedures.

3.10 Deliverables

3.10.1 Flight Photo Index

1. A flight photo index shall be delivered in a geo-referenced AutoCAD version 2014 DWG file format and Esri shapefile (including .prj file) file format. Photo center point locations (derived from the airborne GPS/IMU survey) and image foot prints or edge of image swath shall be included. The photo center locations shall be attributed with the latitude, longitude, elevation, time and flight line. The flight lines shall be attributed with the acquisition date, time, flight height, line number, camera s/n and direction of flight.
2. A Collection Report detailing the mission planning and including the flight logs shall be provided with the Flight Photo Index.
3. Two hardcopies and one digital copy of the Flight Photo Index and the Collection Report shall be delivered to the Consortium Agency for review by an independent photogrammetric consultant immediately after the acquisition of the aerial imagery and prior to beginning the ortho-rectification process.

3.10.2 Image Ownership and Storage

1. All raw and processed aerial imagery acquired as part of this project is the explicit property of the individual consortium agencies. The individual consortium agencies elect to have the successful Vendor store the imagery for a period up to ten years at no additional cost to the consortium agencies.

Section 4: Digital Orthophotography Production

4.1 General

Ortho-rectified imagery tiles will be generated using a current elevation model, ground control, and aero-triangulation data. A complete ortho-rectification will be carried out with a specifically developed set of algorithms that remove image displacement due to topographic relief and the tip and tilt of the aircraft at the moment of exposure. Every effort should be made to minimize the effect of building lean on the usability of the orthophotos.

4.2 Project Diagrams

Maps showing the coverage areas, existing ground control and tiling schema are provided in Attachments 11.1 through 11.6. Digital copies of the coverage areas in Esri shapefile format are available from the Bi-State Regional Commission on request.

4.3 Control Requirements

4.3.1 General

It is the Vendor's responsibility to furnish, where necessary, basic ground control, pre-targeting, and airborne Global Navigation Satellite Service (GNSS) services, sufficient to control the digital orthophoto creation, digital terrain modeling, contour generation, and LiDAR acquisition. Locations of the existing ground control points are provided on the map layouts in Section 11. Respondents shall identify in their response to the RFP the number of existing ground control points they expect to recover/target and the number of additional ground control points that will be required. It is the Vendor's and/or target installer's responsibility to remove all the targeting materials after the flights. The Vendor is encouraged to utilize all or any portion of the existing control information from previous ground control surveys to meet the accuracy standards.

4.3.2 Coordinate Datum

1. The horizontal coordinate datum for the jurisdictions in Iowa shall be the Iowa State Plane South Zone, NAD83(NA2011).
2. The horizontal coordinate datum for the jurisdictions in Illinois shall be the Illinois State Plane West Zone, NAD83(NA2011).
3. The vertical control datum for both Iowa and Illinois shall be based on NAVD 88.
4. All units of measure, horizontal and vertical shall be based on U.S. Survey Feet.

4.4 Horizontal Positional Accuracy Specifications

4.4.1 The 0.25ft (3") GSD digital orthos shall be compiled to meet 1.5 feet horizontal accuracy at 95% confidence level. The horizontal accuracy of the digital orthophotos will be tested using the National Standards for Spatial Data Accuracy (NSSDA) standards.

4.4.2 The 0.125ft (1.5") GSD digital orthos shall be compiled to meet 1.0 feet horizontal accuracy at 95% confidence level. The horizontal accuracy of the digital orthophotos will be tested using the National Standards for Spatial Data Accuracy (NSSDA) standards.

4.4.3 The NSSDA positional accuracy testing may be performed by Dan Corbin, Inc. for the individual consortium agencies.

4.5 Aerotriangulation

4.5.1 General

The selected firm may use either fully analytical aerial triangulation (FAAT) techniques or softcopy (DAAT) to extend and densify the ground control for the aerial photography. The use of airborne GPS/IMU technology is recommended in lieu of conventional aerial triangulation if project accuracy standards are maintained. The Vendor shall provide a complete description of their methodology for performing the aerial triangulation adjustment including the equipment and software used.

4.5.2 Software

An industry-standard software program must be used for analytic aerial triangulation computations. The package used must be capable of strip adjustments, as well as large bundle (blocks of photos and strips) adjustments and shall also have gross error detection facilities. The software must be capable of processing the thousands of points generated in the softcopy process and be able to adjust large blocks of photos. The proposal shall describe the package used for adjustment computations on this project.

4.6 Orthorectification

1. Vendors shall describe in detail the technical procedures, equipment and software to be used for the production of digital orthophotos. A complete description of the digital orthophoto technical methodology will include but not be limited to compilation of the terrain model, ortho rectification process, image mosaicking, radiometric accuracy, estimated file size and all quality control procedures. Vendors shall provide any relevant detail about image processing techniques which they propose to use to enhance the usefulness of the digital image.
2. The orthophotography produced must be mosaicked with consistent tonal and color scale ranges within and between images. Match lines created for mosaicking shall be selected interactively. Match lines are only allowed where adjacent images lie at the

surface of the DTM used to create the orthorectified images and are at the same elevation.

3. Mosaic lines shall not cross through buildings, bridges or other fabricated structures not at ground level. Join lines between overlapping images shall be interactively selected by the Vendor to minimize tonal variations and visible join lines.

4. Buildings, bridges, and overpasses must be spatially correct and not contain bends, breaks, or discontinuities.

5. To minimize distortion of above ground features, the Vendor shall restrict ortho-rectification primarily to neat model areas, using the centers of each photograph rather than every other photograph.

6. The images shall be edge matched so that tonal values are consistent across the edges and there is minimal evidence of the join. Radiometry must be balanced between neighboring tiles. The final ortho rectified tiles shall tile together seamlessly.

4.7 Deliverables

4.7.1 Aerial Triangulation Report

Upon completion of aerial triangulation work, the Vendor will prepare a formal aerial triangulation report for delivery to the Consortium Agency for review by Dan Corbin, Inc. At a minimum the aerial triangulation report will include the following:

1. All misclosures at ground control points with and without use of checkpoints.
2. Final adjusted aerial triangulation solution to horizontal and vertical ground control.
3. Control point residuals and average residuals for each adjustment.
4. ASCII file containing all points and their corresponding final adjusted State Plane Coordinate values.
5. A narrative of any problems that arose during the aerial triangulation and how they were resolved.
6. Two hardcopy reports and one digital copy in PDF file format shall be provided.

4.7.2 Surface Model

1. The surface model utilized to support the 2019 ortho-rectification process shall be provided as a deliverable in Esri 3D shapefiles (with .prj files) and ASCII format. The surface models shall match the existing 1,500ft x 1,500ft even coordinate grid area of coverage and shall be delivered in conjunction with the digital orthos. The surface models shall tile seamlessly.

2. Proposals shall include a complete description of the procedure for collecting and developing the surface model. The Vendor shall describe the quality assurance measures used to verify the accuracy of the surface model.

3. The surface model must contain mass elevation points taken at uniform grid spacing and 3D break lines as required.

4. The grid spacing of the mass points and collection of break lines shall be designed to produce ortho-rectified imagery which meets or exceeds the ortho accuracy standards as specified in this proposal.

5. The vertical accuracy of the surface model shall be sufficient to achieve the specified horizontal accuracies of the ortho-rectified imagery.

6. The State of Iowa has available LiDAR elevation data collected over the course of 2007 through 2010. The data is available in several formats from the following website:

<http://www.geotree.uni.edu/lidar/>

7. The State of Illinois has available LiDAR elevation sets. A 2009 LiDAR elevation set is available for Rock Island County. The data is available in several formats from the following website:

<https://clearinghouse.isgs.illinois.edu/data/elevation/illinois-height-modernization-ilhmp-lidar-data>

8. The vertical accuracy of the 2007-2010 Iowa and 2009 Illinois LiDAR data was assessed along guidelines of the time established for two-foot contour intervals.

9. The Consortium has not verified the accuracy or coverage of the existing web available LiDAR data. It is the sole responsibility of the Vendor to determine the availability, coverage and suitability of the Iowa and Illinois LiDAR data. The positional accuracies of the ortho imagery as specified in section 4.4 must be maintained. The existing LiDAR data may require editing to comply.

4.7.3 Grid-Based Image Tiles

1. The delivery of the orthorectified photography shall be tiled and provide seamless coverage. The digital images are to be edge-matched with no pixel gaps between geographic partitions. Density matching of the digital ortho images is required to create the appearance of a seamless mosaic.

2. The image tiling scheme shall be based on the existing scheme of 1,500ft x 1,500ft even coordinate grids. The Bi-State Regional Commission will provide a digital copy of the tiling scheme.

3. The final ortho tiles created for this project shall cover an area 1,500ft x 1,500ft square.

4. The entire range of a 1,500ft x 1,500ft tile shall be filled with ortho-rectified imagery.

5. The final orthorectified image tiles shall be provided in uncompressed Geo TIFF files and compressed JPEG 2000 files. The compression ratio of the JPEG 2000 files will be determined by the individual jurisdiction during their pilot project.

6. Image tiles which include coverage of two or more jurisdictions shall be provided to each of the included jurisdictions.

7. The final ortho tile count and coverage provided to each jurisdiction shall be determined during the individual contract preparations.

4.7.4 Alternate Tiling Scheme

1. The City of Davenport, IA image tiles and DTM tiles will be based on their existing ¼ section coverage including a 200ft buffer on all sides. The City of Davenport will provide a digital copy of the Alternate Tiling Scheme to the Project Vendor. This same coverage area will be provided to Scott County in the grid-based image tiles as specified in 4.7.3 above.

4.7.5 MrSID Compressed Imagery

1. As listed on the Cost Proposal Forms, the final RGB natural color orthorectified images shall be provided in MrSID (Gen IV) compressed file format. The compression ratio and MrSID version will be approved by the individual contracting jurisdictions during their pilot project.
2. The entire range of a MrSID coverage shall be filled with ortho-rectified imagery and not contain any image gaps at the edges.
3. Each individual MrSID area of coverage will include a buffer comprised of adjacent image tiles on all sides. The MrSID areas of coverage will be verified and approved by the individual contracting jurisdictions during their pilot project.

4.7.6 True Orthos

1. True orthoimagery will be additionally processed to correct for building lean and distortion of obscured features.
2. Flight lines will be aligned to the dominant orientation of major streets to reduce occlusion.
3. Sidelap will be increased from the standard 30% to 80%
4. Minimum sun angle will be increased from 30 degrees to 50 degrees.
5. No image smear shall be present in the true ortho imagery.
6. Perpendicular cross-flights in areas of tall buildings may be required to provide additional views of surface features and eliminate occlusions.

4.7.7 ESRI ArcGIS Tile Cache

1. The coordinate system, cache scales and additional properties of the tile cache will be provided to the successful vendor by the contracting consortium agency.

4.7.8 Metadata

1. Product metadata FGDC compliant in XML and HTML format shall be provided. Metadata files for individual tiles are not required.

Section 5: Topographic Mapping

5.1 Data Collection

1. The topographic mapping features shall be 3D stereo compiled from the triangulated project aerial imagery and positional accurate to the project accuracy standards.
2. Appropriate Esri utilities shall be utilized to topologically structure the vector data. This shall include complete mathematical closure of all contiguous features.
3. No duplicate structure or graphic entities are allowed.
4. No duplicate vertices are allowed within features.
5. All vector information crossing tile edges shall be edge-matched and coordinate connectivity must be present. True mathematical closure is required for features that cross tile boundaries. All digitized features that are continuous across map boundaries shall be edited to effect smooth, continuous lines.

6. Where graphic elements visually meet, they must also digitally meet. All confluences of line, area, and polygon data must be exact mathematically, that is, no “overshoots,” “undershoots,” and/or “offsets” are permitted. Lines that intersect must join precisely.
7. Line Quality - A high cartographic appearance shall be achieved. Transitions from straight line to curvilinear line segments shall be smooth and without angular inflections at the point of intersection. The digital representation must not contain extraneous data at a non-visible level. There should be no jags or hooks or zero length segments. Curvilinear graphic features should be smooth, with a minimum number of points. When appropriate, line smoothing programs should be used to minimize the angular inflection in curvilinear lines. Any lines that are straight, or should be straight, should be digitized using only two points that represent the beginning and ending points of the line.
8. Linear elements should not be broken or segmented unless that segmentation reflects a visual or attribute code characteristic or unless the break is forced by database limitations.
9. Area and Polygon Closure and Centroids - For area features being digitized, the last coordinate pair must be exactly (mathematically) equal to the first coordinate pair.
10. Features that cross-map sheet or model boundaries shall not have duplicate data points at those boundaries except where those boundaries coincide with delivery areas. Post-processing procedures shall be used as necessary to minimize data redundancies.
11. Road centerlines must be continuous 3D polylines, thinned and noded at street intersections.
12. Railroad centerlines must be continuous 3D polylines, thinned and noded at street intersections.
13. DTM, Contour and Planimetric data shall be delivered in Esri 3D shapefiles (with .prj files) and AutoCAD dwg format with the data being tiled in accordance with the existing 1,500ft x 1,500ft grid.

5.2 DTM (with Contours)

5.2.1 Positional Accuracy Specification

1. The digital terrain model (DTM) will be designed to support either the generation of 2ft contours or the generation of 1ft contours as specified on the Cost Proposal Forms.
2. The DTM with 2ft contour accuracy shall meet the following:
 - a. The 2ft contours produced from the DTM shall meet 1.0ft vertical accuracy at 95% confidence level.
3. The DTM with 1ft contour accuracy shall meet the following:
 - a. The 1ft contours produced from the DTM shall meet 0.50ft vertical accuracy at 95% confidence level.
4. The vertical accuracy of the digital terrain models will be tested using the NSSDA standards.
5. The NSSDA positional accuracy testing will be performed by an independent consultant or by the individual jurisdiction.

5.3 Deliverables

1. The DTMs shall match the project tiling grid scheme and shall tile seamlessly.
2. The DTMs shall contain mass elevation points taken at uniform grid spacing and 3D break lines compiled on photogrammetric workstations.
3. The grid spacing of the mass points and collection of break lines shall be designed to meet the accuracy standards as specified in this proposal.
4. Break lines shall not intersect or begin and end at the same x, y coordinates. The break lines shall include the following features:
 - a. Defined breaks in grade.
 - b. Drainage.
 - c. Edge of Banks.
 - d. Edge of roads.
 - e. Centerline of roads.
 - f. Centerline of railroads.
 - g. Surface water boundaries.
 - h. Other linear features defining a change in slope.
 - i. Obstructed areas.
5. The contours shall be provided as continuous 3D polylines, thinned and smoothed. All contours shall have the elevation specified as a property of attribute. Break contours for buildings and other man-made structures that do not conform to the ground.
6. Contours shall portray the shape of the terrain within specified accuracy standards. Accuracy standards notwithstanding, contours shall clearly reflect the crown or cross slope of all paved areas and will truly depict all drainage ways.
7. Every fifth contour will be shown as an index contour. All index contours shall be clearly distinguishable and labeled with their elevations given in full feet. Labels will be oriented to follow the contours and shall be readable looking uphill. The index contours shall be annotated and not clipped.
8. Spot elevation data shall be used to supplement elevation data provided by contours, generally where exact elevations are needed and in areas of relatively flat terrain and where the contours are widely spaced.
 - a. At all road/railroad intersections.
 - b. On the road centerline at the center of bridges and similar structures.
 - c. On the road centerline over all culverts.
 - d. At the crest of all closed contours.
 - e. At the lowest point of all closed depressions, contours, significant saddles, cuts and depressions.
 - f. In visible areas of dense vegetation where ground control is visible
 - g. The surface elevation of all open water bodies shall be indicated by one or more water elevation readings near the center of the water body, or the portion of the water body shown on the map.
 - h. Spot elevations shall be shown in other areas with sufficient frequency so that there is a maximum distance of 100ft in any direction between a contour or spot elevation.
 - i. All spot elevations shall be labeled with decimal values giving their elevation to the nearest one-tenth of a foot.

- j. Spot elevation labels shall be placed so that they do not obscure other map details and will read from west to east.
9. Prior to beginning production of the digital terrain models; the project Vendor shall provide a Pilot Project for review and acceptance by the contracting agency.
10. Individual layers shall be provided for each unique feature. The layer names, line styles, and colors shall be approved by the contracting agency during the review of their Pilot Project.
11. DTM and contour data shall be delivered in Esri 3D shapefiles (with .prj files) and AutoCAD dwg format with the data being tiled in accordance with the existing 1,500ft x 1,500ft grid.

5.3.1 Metadata

1. Product metadata FGDC compliant in XML and HTML format shall be provided. Metadata files for individual tiles are not required.

5.4 Planimetric Mapping Update

5.4.1 Positional Accuracy Specification

1. The planimetric features shall meet the following:
 - a. The planimetric features shall be compiled to meet 2.0ft horizontal accuracy at 95% confidence level.
2. The horizontal positional accuracy of the planimetric features will be tested using the NSSDA standards
3. The NSSDA positional accuracy testing will be performed by an independent consultant.

5.5 Deliverables

The planimetric features shall be stereo compiled from the project aerial imagery.

1. The feature stereo compilation must be performed for general GIS compatibility. The features shall be collected as closed shapes/polygons and attributed as required.
2. Existing Scott County planimetric base data collected in 2014 will be provided to the project vendor for updating.
3. The following planimetric features shall be updated:
 - Building roof prints for all structures 100sqft or greater.
 - Apparent residences shall be differentiated from “out buildings”.
 - Non-building features such as pavilions, awnings, gas pump overhead roofs, etc.
4. Building roof prints shall be topologically clean with no over and/or under shoots.
5. The planimetric feature compilation and conversion process shall ensure duplication of feature data in CAD and GIS versions.
6. Prior to beginning production of the planimetric mapping, the Vendor shall provide a Pilot Project for review and acceptance by the contracting agency.

7. Planimetric data shall be delivered in ESRI file geodatabase format.

5.5.1 Metadata

1. Product metadata FGDC compliant in XML and HTML format shall be provided. Metadata files for individual tiles are not required.

Section 6: LiDAR with DEM

6.1 General

1. These specifications are based upon the USGS National Geospatial Program LiDAR Base Specification V 1.3 and have modified to include additional requirements above and beyond this specification.

2. These specifications are intended to be scalable and used to support the production of two separate LiDAR deliverables with one of the following accuracies:

1. Digital Elevation Model (DEM) with a 1ft contour accuracy.

2. Digital Elevation Model (DEM) with a 2ft contour accuracy.

Note: The Cost Proposal Forms in Section 10 are compiled by agency and individually list which DEM accuracy is required.

3. Responders are encouraged to propose additional tasks, activities or products if they will substantially improve the results of the project. These items should be separated from the required items on the Cost Proposal forms.

6.2 Collection Parameters

1. Data collection must be capable of at least three returns per pulse. Deriving and delivering multiple discrete returns is required in all cases.

2. Intensity values are required for each return. The values are to be recorded in the .las files in their native radiometric resolution.

3. Nominal **Pulse** Spacing (NPS)

- a. DEM with a 1ft contour accuracy:

- i. No greater than 0.71 meters (2 pts/m²).

- b. DEM with a 2ft contour accuracy:

- i. No greater than 1.0 meters (1 pt/m²).

- c. Assessment to be made against single swath, first return only data located within the geometrically usable center portion (typically 90 percent) of each swath, acceptable data voids excluded. Average along-track and cross-track point spacing should be comparable (within 10 percent).

- d. In general, the target NPS for a project should not be achieved through swath overlap or multiple passes.

4. Data Voids within a single swath are not acceptable, except in the following circumstances;
 - a. Where caused by water bodies.
 - b. Where caused by areas of low near infra-red (NIR) reflectivity such as asphalt or composition roofing.
 - c. Where appropriately filled in by another swath.
5. The spatial distribution of geometrically usable points is expected to be uniform. Although it is understood that LiDAR instruments do not produce regularly gridded points, collections should be planned and executed to produce a first-return point cloud that approaches a regular lattice of points, rather than a collection of widely spaced high density profiles of the terrain. The uniformity of the point density throughout the dataset is important and shall be assessed by the vendor using the following steps:
 - a. Generating a density grid from the data with cell sizes equal to the design NPS times 2, using a radius equal to the design NPS.
 - b. Ensuring at least 90 percent of the cells in the grid contain at least one LiDAR point.
 - c. The assessment is to be made against individual (single) swaths, using only the first-return points located within the geo-metrically usable center portion (typically 90 percent) of each swath.
 - d. Excluding acceptable data voids previously identified in this specification.

Note: This requirement may be relaxed in areas of substantial relief where it is impractical to maintain a consistent and uniform distribution.

Note: The process described in this section relates only to the uniformity of the point distribution. It does not relate to, nor can it be used for the assessment of point density or NPS.

6. Scan Angle: Total FOV should not exceed 40° (+/-20° from nadir). Horizontal and vertical accuracy shall meet the requirements as specified below.

Note: This requirement is primarily applicable to oscillating mirror LiDAR systems. Other instrument technologies may be exempt from this requirement.

7. Vertical Accuracy of the LiDAR point data shall be assessed and reported by the vendor.
 - a. The minimum vertical accuracy for the unclassified LiDAR point cloud for open terrain/hard surface area is listed below:
 - b. DEM with a 1ft contour accuracy:
 - i. Min vertical accuracy shall meet 9cm (0.3ft) RMSEz compared to 20 independent check points.
 - c. DEM with a 2ft contour accuracy:
 - i. Min vertical accuracy shall meet 15cm (0.50ft) RMSEz compared to 20 independent check points.
 - d. Check points shall be independent of the ground control points used by the vendor for geo-referencing the point cloud data.

- e. Check points are required to be well-distributed throughout the project area.
 - f. Point cloud data accuracy is to be tested against a Triangulated Irregular Network (TIN) constructed from LiDAR points in clear and open areas. A clear and open area can be characterized with respect to topographic and ground cover variation such that a minimum of 5 times the NPS exists with less than 1/3 of the RMSEz deviation from a low-slope plane. Slopes that exceed 10 percent should be avoided. Ground that has been plowed or otherwise disturbed is not acceptable. All tested locations should be photographed showing the position of the tripod and the surrounding ground condition.
 - g. Accuracy for the LiDAR point cloud data is to be reported independently from accuracies of derivative products (i.e., DEMs).
8. Flight line overlap of 10% or greater is required to ensure there are no data gaps between the usable portions of the swaths. Collections in high relief terrain are expected to require greater overlap. Any data with gaps between the geometrically usable portions of the swaths will be rejected.
9. Collection Area is the defined project area, buffered by a minimum of 500ft.
10. Collection Conditions:
- a. Atmospheric:
 - i. Cloud and fog-free between the aircraft and ground.
 - b. Ground:
 - i. Snow free; very light, undrifted snow may be acceptable in special cases, with prior approval.
 - c. Water:
 - i. No unusual flooding or inundation.
 - d. Vegetation:
 - i. Leaf-off is preferred; however, numerous factors beyond human control may affect the vegetative condition at the time of collection.

6.3 Data Processing

- 1. All processing should be carried out with the understanding that all point deliverables are required to be in fully compliant LAS format v1.4.
- 2. The collection of full waveform data is not required.
- 3. GPS times are to be recorded as Adjusted GPS Time, at a precision sufficient to allow unique timestamps for each pulse. Adjusted GPS Time is defined to be Standard (or satellite) GPS time minus (1×10^9).
- 4. Horizontal datum shall be referenced to the North American Datum of 1983/NA2011 adjustment. Vertical datum shall be referenced to the North American Vertical Datum of 1988 (NAVD 88). The most recent NGS-approved Geoid model shall be used to perform conversions from ellipsoidal heights to orthometric heights.

5. The Coordinate Reference System:
 - a. The horizontal coordinate datum for the jurisdictions in Iowa shall be the Iowa State Plane, South Zone NAD83(NA2011 Adjustment).
 - b. The horizontal coordinate datum for the jurisdictions in Illinois shall be the Illinois State Plane, West Zone NAD83(NA2011 Adjustment).
 - c. All units of measure shall be based on the U.S. Survey Foot.
6. Each swath shall be assigned a unique File Source ID. The Point Source ID field for each point within each LAS swath file shall be set equal to the File Source ID prior to any processing of the data.
7. Point Families (multiple return “children” of a single “parent” pulse) shall be maintained intact through all processing before tiling. Multiple returns from a given pulse shall be stored in sequential (collected) order.
8. Outliers, blunders, and high/low points shall be classified to class 7 noise.
9. Use of Overlap class is allowable at the discretion of the vendor.
10. Classification Accuracy: It is expected that due diligence in the classification process will produce data that meets the following test:
 - a. Within any 3,000ft x 3,000ft area, no more than 2% of non- ‘noise points’ will possess a demonstrably erroneous classification value.
 - b. This includes points in Classes 0 and 1 that should correctly be included in a different Class required by the contract.

Note: This requirement may be relaxed to accommodate collections in areas where the Consortium agrees classification to be difficult.

11. Classification Consistency: Point classification is to be consistent across the entire project. Noticeable variations in the character, texture, or quality of the classification between tiles, swaths, lifts, or other non-natural divisions will be cause for rejection of the entire deliverable.
12. Tiling Scheme
 - a. The tile scheme for delivery of products is 1,500ft x 1,500ft. The Bi-State Regional Commission will provide the tile scheme to the vendors as an Esri shapefile.
 - b. This scheme will be used for all tiled deliverables.
 - c. Data will fill entire tile with no void areas.
 - d. Tiles must be sized using the same units as the coordinate system of the data.
 - e. Tiled deliverables shall conform to the tiling scheme, without added overlap except for the hydro-enforced DEMs.
 - f. Tiled deliverables shall edge-match seamlessly in both the horizontal and vertical.

6.4 Deliverables

6.4.1 Classified Point Cloud

1. All project swaths returns and collected points, fully calibrated, adjusted to ground, and classified.
2. Fully compliant LAS v1.4, using PDRF 6,7,8,9, or 10.
3. Correct and properly formatted georeferenced information must be included in all LAS file headers.
4. GPS times are to be recorded as Adjusted GPS Time, at a precision sufficient to allow unique timestamps for each pulse.
5. Intensity values, normalized to 16 bit.
6. Tiled delivery, without overlap (1,500ft x 1,500ft tiling scheme).
7. Classification Scheme:
 - 1 = processed but unclassified.
 - 2 = Bare Earth Ground.
 - 4 = Vegetation.
 - i. (provide as option on the Cost Proposal Forms)
 - 6 = Buildings, structures and other man-made features.
 - i. (provide as option on the Cost Proposal Forms)
 - 7 = Noise.
 - 9 = Water.
 - 10 = Overlap points. (if used)

6.4.2 Bare Earth DEM

1. Bare-earth DEM with “Hydro-Enforced” (not Hydro-flattened) break lines, generated to the project limits. (See Appendix 2 of the USGS National Geospatial Program LiDAR Base Specification V 1.3 for more information on hydro-enforced break lines.)
2. Cell Size:
 - a. DEM with 1ft contour accuracy = 2 feet.
 - b. DEM with 2ft contour accuracy = 4 feet.
3. Delivery in a GeoTIFF raster file format.
 - a. Georeferenced information shall be included in each raster file.
4. Tiled delivery, without overlap.
5. DEM tiles will show no edge artifacts or mismatch.

6.4.3 Surface DEM

1. Surface DEM generated to the limits of the project buffer.
2. Derived from all first return points, including all permanent above ground features like buildings and bridges.
3. Cell Size:
 - a. DEM with 1ft contour accuracy = 2 feet.
 - b. DEM with 2ft contour accuracy = 4 feet.
4. Delivery in a GeoTIFF raster file format.
 - a. Georeferenced information shall be included in each raster file.
5. Tiled delivery, without overlap.
6. DEM tiles will show no edge artifacts or mismatch.

6.4.4 Break lines

1. Break lines shall be developed to the project limits.
2. All Hydro-Enforced break lines shall be delivered as an Esri feature class (Polyline Z or Polygon format, as appropriate to the type of feature represented) and as AutoCAD 3D polylines.

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3. Each feature class or shapefile will include properly formatted and accurate georeferenced information.
4. Break lines must use the same coordinate reference system (horizontal and vertical) and units as the LiDAR point delivery.
5. Break line delivery must be in tiles and must edge-match seamlessly in both the horizontal and vertical.

6.4 5 Metadata

1. Collection Report detailing mission planning and flight logs.
2. QA/QC Reports:
 - a. Uniformity of the point density analysis.
 - b. Vertical accuracy analysis.
3. Control and Calibration points: All control and reference points used to calibrate, control, process, and validate the LiDAR point data or any derivative products are to be delivered.
4. Product metadata (FGDC compliant, XML format metadata).

Section 7: Pilot Projects

7.1 Digital Ortho Pilot Project

1. Immediately after the acquisition of the 2019 photography and prior to beginning full production of the ortho-rectified imagery; the Vendor shall provide each Consortium Agency listed in the Cost Proposal Forms an ortho pilot project for review and acceptance by the Consortium Agency.
2. The pilot projects shall be located within each Consortium Agencies' jurisdiction and selected by the Vendor. The location of the pilot projects shall be clearly documented in the Vendor's Proposal.
3. The area of an urban pilot project shall be approximately 4 tiles x 4 tiles (1.29 sq mi).
4. The area of a rural pilot project shall be approximately 6 tiles x 6 tiles (2.92 sq mi).
5. The ortho pilot projects shall include the color digital orthos and meta-data report.
6. The ortho pilot projects will be used to validate all procedures and verify that the project deliverables meet the specifications. The tonal qualities of the imagery in the approved pilot projects will become the standard for the remainder of the projects.

7.2 DTM with Contours Pilot Project

1. Prior to beginning full production of the digital terrain models (DTMs) the Vendor shall provide a pilot project for review and acceptance by the contracting agency.
2. The DTM pilot projects shall cover the same areas as the ortho pilot projects.
3. The DTM pilot projects shall include the gridded mass points, break lines, contours and spot elevations. Individual layers shall be provided for each unique feature.
4. The layer names, line styles, and colors shall be approved by the contracting agency during the review of the pilot project.

7.3 Planimetric Pilot Project

1. Prior to beginning full production of the planimetric feature collection the Vendor shall provide a pilot project for review and acceptance by the contracting agency.
2. The Planimetric pilot projects shall cover the same area as the ortho pilot projects.
3. The Planimetric pilot project shall include a complete set of planimetric features. Individual layers shall be provided for each unique feature.
4. The layer names, line styles, and colors shall be approved by the contracting agency during the review of the pilot project.

7.4 LiDAR with DEM Pilot Project

1. Prior to beginning full production of the LiDAR digital elevation model the Vendor shall provide a pilot projects for review and acceptance by the contracting agency.
2. The LiDAR pilot projects shall cover the same area as the ortho pilot projects.
3. The LiDAR pilot projects shall include the Classified Point Cloud, Bare Earth DEM, and Surface DEM.

Section 8: Deliverables

8.1 General

See the individual Cost Proposal Forms in Section 10 for each list of required deliverables by agency.

8.2 Project Reports and Metadata

1. All project reports shall be provided in electronic format, PDF, Word, Excel, etc as appropriate.
2. Written progress reports must be submitted to Denise Bulat and shared with consortium members every month. Included with each delivery of data shall be a Meta-data report. The format of the Meta-data report shall be approved by the Consortium Agencies after the delivery of the pilot projects. A final report on the production process, problems encountered and including quality control information generated throughout the project will be provided at the end of the projects.

8.3 Delivery Schedule

Each Vendor shall include with their proposal a delivery schedule for each Consortium agency with the final delivery to occur on or before December 31st, 2019.

If the Vendor fails to meet the project delivery schedule, a Consortium agency shall have the option to require the Vendor to forfeit the sum of \$200 per contract for each business day that they are late. The Vendor agrees that the \$200 per day late penalty shall be deducted from the final contract payment.

Section 9: Terms and Conditions

9.1 General

1. The Bi-State Regional Commission is the host agency for this proposal, after the award of the project, the individual agencies of the Consortium will provide their own contract administration and will be responsible for their own receiving, inspection, acceptance, payments and dispute resolution. The Bi-State Regional Commission shall not be held liable for any costs, damages, etc. incurred by any other participating entity.
2. The selected Vendor shall enter into contracts with the individual Consortium agencies that incorporate the following terms and conditions.
3. Payment to the extent of the value of work done and materials furnished will be made upon completion of the sections of the project and submission of an invoice from the Vendor. 10% will be retained from each invoice until the project is finished to the satisfaction of the contracting entity. The retainage will be paid in full upon the acceptance of the final product as described in this RFP.

4. The Vendor assumes the responsibility for loss of or damage to deliverables in shipment until delivery is confirmed in writing by the contracting entity.
5. Each individual agency of the Consortium will review their own deliverables, in a timely manner for compliance with the specifications.
6. The Vendor must agree in its proposal to promptly correct all defects and or failures to comply with the specifications contained herein for which the Vendor is responsible.
7. All aerial photography and digital orthophoto images associated with this project are the explicit property of the Consortium member agencies. The products produced from the aerial photography are the explicit property of the respective contracting entities. At the conclusion of the project, the contractor shall deliver all project materials and data to the contracting entities, unless otherwise instructed, and the contractor is expressly prohibited from retaining, using, selling or distributing in any manner, any such materials and data without the expressed written consent of the respective contracting entity.

9.2 Insurance

1. Vendor shall take out and maintain during the life of this Contract such public liability and property damage insurance as shall protect Vendor, its subcontractors, and the individual Consortium agencies from claims for damages for personal injury, including accidental death, as well as for claims for property damage, which might arise from operations under this Contract, whether such operations be by Vendor or its subcontractor, or by anyone directly or indirectly employed by either of them.
2. Vendor shall also take out and maintain for the term of this Contract the following coverages: \$2 million general aggregate general liability; \$1 million combined single limit automobile liability; \$3 million aircraft insurance; \$5 million excess liability; statutory workers' compensation liability; and professional liability in the amount of not less than \$1 million.
3. All insurance coverages required in this Contract shall be maintained in force for one (1) year after final payment of purchases made thereunder. The Vendor shall provide the individual Consortium agencies with certificates of insurance on all policies required under this Contract within ten (10) days of execution of this Contract and prior to the start of work.
4. All insurance policies shall be issued by responsible companies who are acceptable to the Consortium agencies. The Vendor shall not cause any insurance to be canceled nor permit any insurance to lapse during the life of this Contract.
5. The Vendor shall indemnify and hold the Consortium agencies harmless from any damages, cost, claims or expenses which may arise as a result of any failure on the part of the Vendor to provide accurate and complete data and information to the Consortium agencies as outlined and required by the terms and conditions of this Contract except as may be defined in Section 9.3 Warranty.

9.3 Warranty

1. The Vendor, by signing this Agreement, acknowledges full understanding of the extent and character of the work required and the conditions surrounding the performance thereof. The Consortium agencies will not be responsible for any alleged misunderstanding of conditions surrounding the performance thereof. It is understood that the execution of this Agreement by the Vendor serves as its stated commitment to fulfill all the conditions referred to in this Agreement.

2. Vendor warrants that the work performed, and deliverables provided under this Agreement shall conform to the specifications and the relevant recognized standards and procedures for aerial mapping. The work shall be of high quality and shall be within the tolerances allowed by the above-cited references. If the Vendor is notified in writing by a Consortium agency of a discrepancy, deficiency, inaccuracy, or fault in the work, within thirty (30) days of such notice the Vendor shall re-perform such portions of the work necessary to correct the fault. If the fault requires a repeat of the aerial flyover of the project area, the repeat flyover will be performed at the first available opportunity at a time of the year mutually agreed upon with and approved by the Consortium agency. All rework shall be made at no additional cost to the Consortium agency.

3. The warranty will apply indefinitely for major errors/defects found in Vendors' mapping and for one year from the time of final delivery for cosmetic/minor revisions and replacement of lost data files previously documented to be delivered. The Vendor shall not be liable for secondary, incidental or consequential damages of any nature resulting from any work performed under this Agreement.

4. All warranties shall begin on the date of Contract Completion and run for one year thereafter.

9.4 Compliance with Laws

Contracts arising from this Request for Proposals shall be construed and enforced in accordance with the laws of the States of Illinois and Iowa and all parties shall comply with all applicable laws, regulations, ordinances and other rules of governments and governmental agencies that exist in the project area.

9.5 Conflict of Interest

The Bi-State Regional Commission or any of the Consortium agencies reserve the right to request that the Vendor should provide a statement that the Vendor had no conflict of interest with past, present, or known future policies, plans or programs of the agencies of the Consortium.

9.6 Non-Discrimination

The Vendor will not discriminate against any employee or applicant for employment because of race, color, national origin, sex or religion. The Vendor will take Affirmative Action to ensure that the applicants are employed and that the employees are treated during employment without regard to their race, color, national origin, sex, or religion. Such action shall include, but not be limited to, the following: employment, referral for employment, upgrading, promotion, demotion or transfer, recruitment or recruitment advertising, layoffs or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

The Vendor further acknowledges that it recognizes and will comply with Executive Order 11246, and with the Civil Rights Act of 1964.

The awarded Vendor may be required to sign an Equal Employment Opportunity Policy Statement.

Section 10: Cost Proposal Forms

10.1
2019 Scott County
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; Scott County may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.2” for the 2019 Scott County extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for Deliverables.	\$ _____	\$ _____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 406.04 sq miles. (5,031 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Rural Ortho Pilot Project. (See Section 7.1)	\$ _____	\$ _____
<u>Options</u>		
Item 3: Planimetric Mapping Update - Approx. 406.04 sq miles. (5,031 tiles) - See Section 5.5 for Deliverables. - Updated building planimetric - Planimetric Pilot Project. (See Section 7.3)	\$ _____	\$ _____
Item 4: ESRI ArcGIS Tile Cache - Countywide including Davenport and Bettendorf - Approx. 499.58 sq miles. 6,190 tiles - See Section 4.7.7 for Deliverables.		\$ _____
Item 5: MrSID Compressed Image - Countywide Including Davenport and Bettendorf - See Section 4.7.5 for Deliverables.		\$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.2
2019 City of Davenport, IA
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Davenport may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.2” for the 2019 City of Davenport extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$ _____	\$ _____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 69.57 sq miles. (862 tiles) - See Section 4.7 for the Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)	\$ _____	\$ _____
<u>Options</u>		
Item 3: LiDAR with DEM (2ft Contour Accuracy) Approx. 69.57 sq miles. (862 tiles)	\$ _____	\$ _____
Item 4: DTM & 2ft Contours (requires Item 1 & 3) - Approx. 69.57 sq miles. (862 tiles) - See Section 4.7 for the Deliverables. - DTM Pilot Project. (See Section 7.2)	\$ _____	\$ _____
Item 5: LiDAR with DEM (1ft Contour Accuracy) Approx. 69.57 sq miles. (862 tiles)	\$ _____	\$ _____
Item 6: DTM & 1ft Contours (requires Item 1 & 5) - Approx. 69.57 sq miles. (862 tiles) - See Section 4.7 for the Deliverables. - DTM Pilot Project. (See Section 7.2)	\$ _____	\$ _____
Item 7: ESRI ArcGIS Tile Cache - Citywide approx. 69.57 sq miles. 862 tiles - See Section 4.7.7 for Deliverables.		\$ _____
Item 8: Alternate Tiling Scheme (Ortho Tiles & DTM Tiles) - PLSS ¼ section tiles w/200ft buffer - See Section 4.7.4 for Deliverables.		\$ _____
Item 9: MrSid Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.3
2019 City of Bettendorf, IA
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Bettendorf may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.2” for the 2019 City of Bettendorf extents.

	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
<u>Base Cost</u>		
Item 1: Aerial Image Acquisition 3,000ft AMT flights.	\$ _____	\$ _____
See Section 3.10 for the Deliverables.		
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels	\$ _____	\$ _____
- Approx. 23.97 sq miles. (297 tiles) - See Section 4.7 for the Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)		
<u>Options</u>		
Item 3: Aerial Image Acquisition 1,500ft AMT flights.	\$ _____	\$ _____
See Section 3.10 for Deliverables.		
Item 4: Color Digital Ortho Tiles 0.125ft GSD pixels	\$ _____	\$ _____
- Approx. 23.97 sq miles. (297 tiles) - See Section 4.7.3 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)		
Item 5: LiDAR with DEM (1ft Contour Accuracy)	\$ _____	\$ _____
- Approx. 23.97 sq miles. (297 tiles) - See Section 6.4 for Deliverables. - LiDAR Pilot Project. (See Section 7.4)		
Item 6: MrSid Compressed Imagery		
- See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.4
2019 MAGIC (Muscatine County, IA)
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; Muscatine County may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.3” for the 2019 Muscatine County extents.

	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
<u>Base Cost Rural Area</u>		
Item 1: Aerial Image Acquisition 3,000ft AMT flights.	\$ _____	\$ _____
• See Section 3.10 for the Deliverables.		
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels	\$ _____	\$ _____
• Approx. 382.39 sq miles. (4738 tiles) • See Section 4.7 for the Deliverables. • Uncompressed GeoTIFF & Compressed JPEG 2000. • Rural Ortho Pilot Project. (See Section 7.1)		
<u>Base Cost Urban Areas (Cities of Muscatine, West Liberty, Wilton, & Fruitland)</u>		
Item 3: Aerial Image Acquisition 1,500ft AMT flights.	\$ _____	\$ _____
• See Section 3.10 for the Deliverables.		
Item 4: Color Digital Ortho Tiles 0.125ft GSD pixels	\$ _____	\$ _____
• Approx. 89.75 sq miles. (1112 tiles) • See Section 4.7 for the Deliverables. • Uncompressed GeoTIFF & Compressed JPEG 2000. • Urban Ortho Pilot Project. (See Section 7.1)		
Item 5: MPW Aerial Image Acquisition 1,500ft AMT flights.	\$ _____	\$ _____
• See Section 3.10 for the Deliverables.		
Item 6: MPW Color Digital Ortho Tiles 0.125ft GSD pixels	\$ _____	\$ _____
• Approx. 2.42 sq miles. (30 tiles) • See Section 4.7 for the Deliverables. • Uncompressed GeoTIFF & Compressed JPEG 2000.		
<u>Options</u>		
Item 7: True Orthos		
• 0.125ft GSD pixels • Downtown City of Muscatine Approx. 3.47 sq miles. (43 tiles) • See Section 4.7.6 for Deliverables • Uncompressed GeoTIFF & Compressed JPEG 2000.		\$ _____
Item 8: MrSID Compressed Imagery		
• See Section 4.7.5 for Deliverables. • 1 Countywide coverage (excludes MPW tiles in Louisa Co.)		\$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.5
2019 Rock Island County, IL
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; Rock Island County may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.4” for the 2019 Rock Island County extents.

<u>Base Cost (Rural Area)</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$ _____	\$ _____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 379.89 sq miles. (4707 tiles) - See Section 4.7 for the Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Rural Ortho Pilot Project. (See Section 7.1)	\$ _____	\$ _____
<u>Options</u>		
Item 5: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 County wide coverage. (including the City of Rock Island's True Orthos) 1 Metro area coverage. (including the City of Rock Island's True Orthos)		\$ _____ \$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.6

2019 Village of Carbon Cliff, IL COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the Village of Carbon Cliff may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 Village of Carbon Cliff extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for Deliverables.	\$_____	\$_____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 2.82 sq miles. (35 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Utilize the City of East Moline’s Ortho Pilot Project.	\$_____	\$_____
Options Item 3: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$_____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.7
2019 Village of Coal Valley, IL
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the Village of Coal Valley may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 Village of Coal Valley extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$_____	\$_____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 5.25 sq miles. (65 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Utilize the City of Moline’s Ortho Pilot Project	\$_____	\$_____
<u>Options</u>		
Item 3: 4: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$_____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.8

2019 City of East Moline, IL COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of East Moline may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 City of East Moline extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$_____	\$_____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 20.74 sq miles. (257 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)	\$_____	\$_____
<u>Options</u>		
Item 3: LiDAR with DEM (1ft Contour Accuracy) - Approx. 20.74 sq miles. (257 tiles) - See Section 6.4 for Deliverables. - LiDAR Pilot Project. (See Section 7.4)	\$_____	\$_____
Item 4: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$_____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.9
2019 City of Moline, IL
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Moline may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 City of Moline extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. • See Section 3.10 for the Deliverables.	\$ _____	\$ _____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels • Approx. 24.62 sq miles. (305 tiles) • See Section 4.7 for Deliverables. • Uncompressed GeoTIFF & Compressed JPEG 2000. • Urban Ortho Pilot Project. (See Section 7.1)	\$ _____	\$ _____
 <u>Options</u>		
Item 3: LiDAR with DEM (1ft Contour Accuracy) • Approx. 33.82 sq miles. (419 tiles) • See Section 6.4 for Deliverables. • LiDAR Pilot Project. (See Section 7.4)	\$ _____	\$ _____
Item 4: MrSID Compressed Imagery • See Section 4.7.5 for Deliverables. • 1 Citywide coverage.		\$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.10
2019 City of Rock Island, IL
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Rock Island may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 City of Rock Island extents.

	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
 <u>Base Cost</u>		
Item 1: Aerial Image Acquisition 3,000ft AMT flights.	\$ _____	\$ _____
• See Section 3.10 for the Deliverables.		
 Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels	\$ _____	\$ _____
• Approx. 27.44 sq miles. (340 tiles) • See Section 4.7 for Deliverables. • Uncompressed GeoTIFF & Compressed JPEG 2000. • Urban Ortho Pilot Project. (See Section 7.1)		
 <u>Options</u>		
Item 3: True Orthos		
• 8 tiles downtown • See Section 4.7.6 for Deliverables		\$ _____
 Item 4: MrSID Compressed Imagery		
• See Section 4.7.5 for Deliverables. • 1 Downtown True Ortho coverage. • 1 City wide coverage including the True Orthos.		\$ _____ \$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.11 2019 City of Silvis, IL COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Silvis may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 City of Silvis extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$_____	\$_____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 4.76 sq miles. (59 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)	\$_____	\$_____
<u>Options</u>		
Item 3: LiDAR with DEM (1ft Contour Accuracy) - Approx. 4.76 sq miles. (59 tiles) - See Section 6.4 for Deliverables.	\$_____	\$_____
Item 4: DTM & 1ft Contours (requires Item 1 & 3) - Approx. 4.76 sq miles. (59 tiles) - See Section 4.7 for the Deliverables. - DTM Pilot Project. (See Section 7.2)	\$_____	\$_____
Item 5: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$_____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.12
2019 City of Milan, IL
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Milan may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.5” for the 2019 City of Milan extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. • See Section 3.10 for the Deliverables.	\$ _____	\$ _____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels • Approx. 10.90 sq miles. (135 tiles) • See Section 4.7 for Deliverables. • Uncompressed GeoTIFF & Compressed JPEG 2000. • Utilize the City of Rock Island’s Ortho Pilot Project.	\$ _____	\$ _____
 <u>Options</u>		
Item 3: LiDAR with DEM (1ft Contour Accuracy) • Approx. 10.90 sq miles. (135 tiles) • See Section 6.4 for Deliverables. • LiDAR Pilot Project. (See Section 7.4)	\$ _____	\$ _____
Item 4: MrSID Compressed Imagery • See Section 4.7.5 for Deliverables. • 1 Citywide coverage.		\$ _____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.13 2019 City of Cambridge, IL COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Cambridge may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.6” for the 2019 City of Cambridge extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$_____	\$_____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 3.63 sq miles. (45 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)	\$_____	\$_____
<u>Options</u>		
Item 3: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$_____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.

Section 10: Cost Proposal Forms

10.14
2019 City of Geneseo, IL
COST PROPOSAL FORM

Vendors are requested to submit costs per Item as listed below considering and incorporating all specifications, considerations, and requirements previously set forth in this document.

After the final project vendor selection has been made; the City of Geneseo may modify their scope of services to negotiate a revised contract amount.

See Attachment “11.6” for the 2019 City of Geneseo extents.

<u>Base Cost</u>	<u>Cost per Sq/mi</u>	<u>Total Cost</u>
Item 1: Aerial Image Acquisition 3,000ft AMT flights. See Section 3.10 for the Deliverables.	\$_____	\$_____
Item 2: Color Digital Ortho Tiles 0.25ft GSD pixels - Approx. 14.04 sq miles. (174 tiles) - See Section 4.7 for Deliverables. - Uncompressed GeoTIFF & Compressed JPEG 2000. - Urban Ortho Pilot Project. (See Section 7.1)	\$_____	\$_____
<u>Options</u>		
Item 3: LiDAR with DEM (1ft Contour Accuracy) - Approx. 14.04 sq miles. (174 tiles) - See Section 6.4 for Deliverables. - LiDAR Pilot Project. (See Section 7.4)	\$_____	\$_____
Item 4: MrSID Compressed Imagery - See Section 4.7.5 for Deliverables. 1 Citywide coverage.		\$_____

Please note: All digital products shall be delivered on USB 3.0 external thumb drives.