

December 29, 2008

Mr. Steve Brown
County Counselor
Franklin County
315 South Main Street
Ottawa, KS 66067

Project: 16811 | Franklin County, Kansas

Dear Mr. Brown:

We are pleased to respond to your request for proposal regarding the above referenced project. This proposal describes our understanding of the scope of work and services your project requires. We will comply with all of the provisions in the RFP

Summary of Work

For this project, we will acquire new vertical stereo aerial photography at a nominal scale of 1"=833', 1"=1667' or 1"=3333' using black and white film.

From this aerial photography, we will produce the following:

- Digital orthophotos intended for viewing and plotting at a scale of 1"=100', 1"=200' and 1"=400' and represented with a pixel size (Ground Sample Distance or GSD) of 0.5', 1.0' and 2.0', depending upon the selections made by Franklin County.
- We could produce 3.0' GSD data if file size is a problem, but our proposed flight height and negative scale will support a 2.0' GSD on a county-wide basis for no additional cost.

Project Area and Ground Sample Distance

The area to be flown at the various scales was provided as a shapefile by Mr. Roy Baker. The 100' scale data covers 65 tiles, the 200' scale data cover eight (8) tiles and the 400' scale data cover the entire county consisting of 156 tiles.

If the 2.0' county-wide option is selected we will fly the eight 200' scale tiles at the same altitude as the 100' scale tiles and could produce 0.5' GSD over those eight areas as well. If the 1.0' county-wide option is selected, those eight 200' scale tiles will be provided with only a 1.0' GSD and the 100' scale tiles will have a 0.5' GSD.

Acquisition Delays/Environmental Conditions

The Aero-Metric plane flying your project will be equipped with Airborne GPS (ABGPS), a gyro stabilized mount and the film camera system. The camera will not be in the direct path of any exhaust gases, effluence or oil from the aircraft engines. The aircraft and camera systems used to acquire the aerial images will be owned and completely operated by Aero-Metric professionals.

We do not foresee, at this time, any difficulty in obtaining the aerial photography during the spring, 2009 flying season. Extreme conditions created by natural disasters on site or at remote locations could delay or severely alter the scheduled collection of data. Should such an event transpire we would need to mutually agree upon a course of action.

We will restrict our acquisition to the 30° window regardless of what date the flight(s) occurs. Additionally, the flights will not occur during times when clouds, snow, flooding, haze or smoke will impair the final digital orthophoto. A Franklin County representative will be responsible for providing an initial notice to proceed, indicating ground conditions within the entire project area are sufficient to meet the RFP standards. Subsequently, it will be Aero-Metric's decision when to fly or not fly depending upon existing conditions. Our Project Manager will be in close contact (daily) with your appointed representative until the flying has been completed.

Photogrammetric Control Surveying

Aero-Metric will be responsible for obtaining all necessary ground control information. We understand the project requires the final mapping data to incorporate the following:

- Horizontal Datum: Kansas State Plane South Coordinate System, North American Datum (NAD)83
- Vertical Datum: North American Vertical Datum (NAVD)88
- Units in US Survey Feet

The purpose of the Geodetic Control Survey is to bring geodetic control into the project area. This ensures that there will be an adequate GPS solution for the ABGPS data based on the correct horizontal and vertical datum. Aero-Metric will employ a network of 20 ground control locations to extend the ground control across the project area. We will collect approximately five control points in each county. Targeting will not be necessary.

Digital Elevation Model (DEM)

In addition to the existing elevation data we will collect necessary breaklines and mass points in areas of change to further ensure the digital orthophoto data will meet the requested horizontal accuracy. The DEM created will support the horizontal accuracy required of the digital orthophoto data. This updated DEM data will also be provided.

Digital Orthophotos

During the orthophoto creation process, the information contained on the original photograph is retained; however, image displacements caused by camera tip, tilt, crab and relief displacement are removed by using the process of ortho rectification.

The digital raster data structure consists of an ordered set of picture elements (pixels), each representing a small square portion of the raster image. Pixel size is selected such that it represents a specific value in the ground coordinate system, such as 0.5 or 1.0' foot as proposed for this project. This pixel size is commonly referred to as ground resolution or ground sample distance (GSD). A rectified image file is produced in which each pixel is adjusted to represent the proper X-Y coordinate value in the ground coordinate system. It is important to note that our methodology results in an ortho where every pixel is differentially rectified. Ours is **NOT** a second generation process.

The following data sets are used as input to the digital ortho-rectification process:

- Digital photo image file
- Digital elevation file from client's data or photogrammetrically collected data
- Coordinates for the camera fiducials
- Camera calibration data
- Camera exterior orientation parameters from the aerotriangulation

OrthoVista software is used for tone matching, cropping and feathering to create a seamless image mosaic. After the ortho rectification process, the image data is written into a GeoTIFF image file format

with world files on a tile basis, without overlap. MrSID compressed formats are also available for delivery at a 1:20 ratio and are provided to the client for review. OrthoVista is an automated image processing software, which has also helped reduce the time it takes to mosaic large image sets.

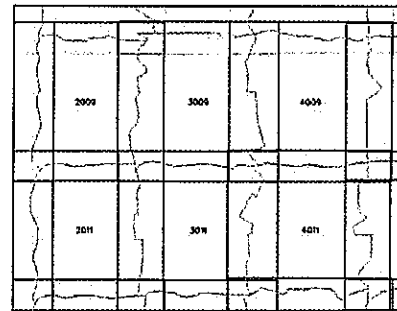
Radiometric Adjustment - Color Balancing/Tone Matching

We understand the client's desire to receive orthophoto image files which are in tonal balance, to allow any combination of image files to be merged and viewed/plotted without noticeable variation in tone between flight lines and file to file.

Our clientele routinely desire the ability to select multiple adjacent images and use them to simultaneously prepare one single image file and/or plot to represent specified areas. As such, we have incorporated a histogram and tonal match evaluation to be completed as part of our standard digital orthophoto processing.

The ability to process image files to a near perfect tonal match depends upon many factors, some of which are beyond the control of the photogrammetrist. Ideally all the photography should be acquired at nearly the same time of day, on consecutive days, and under similar atmospheric condition. For a project as large as this and with changing weather conditions, it may not be possible.

Aero-Metric uses the auto-dodging utility of our OrthoVista software to process all image files. This software does an excellent job of matching the tonal values not only within the image, but also between adjacent flight lines. To expect a 100% tonal match between images is impractical for the reasons previously stated. However, given the modern equipment we possess, careful timing, coordination, and the use of this imaging software, the outcome will meet your expectations. This has been proven in conjunction with previous contracts and can be verified by contacting our references.



Histogram enhancements used by Aero-Metric include linear contrast stretch, user selected contrast stretch, histogram normalization and histogram clipping.

It should be understood that all of the algorithms used to apply radiometric enhancements to images are specifically designed not to change the geometric accuracy of the image data set.

Mosaicking

Aero-Metric is one of the few companies that use a totally interactive mosaicking procedure by manually selecting crop lines (also called cut lines) between adjacent ortho images. The graphic here shows overlapping photo edges (straight lines) with the manual crop lines. Manual crop lines maintain the highest accuracy and image quality.

Crop line locations are selected in areas of constant tone so the join between adjacent orthos is visibly seamless. Examples of these locations are shadows, plowed or grass fields, road edge or shoulder, ditch bottom, etc. In built up areas it is more difficult, so the crop line will have more vertices to find the best location to "hide" or make seamless the join. Manual crop lines will be required. Companies with automated crop line selection will show ghosting on elevated features such as cars and buildings resulting in a sub-par ortho image. Aero-Metric procedures eliminate these problems.

Feathering, or averaging the radiometric values of adjacent photos, is used in the final mosaic step. Aero-Metric has developed a methodology whereby the feathering proceeds along user definable bands on either side of the crop lines. These bands can be a few pixels wide in built up areas to many pixels in rural areas, though as a rule the narrower the better for image quality.

OrthoVista software, together with operator interaction, is used for final radiometric tone matching, cropping and feathering to create a seamless image mosaic.

Edge Matching and Ortho Output

Edge matching is achieved by mosaicing the entire project using manual crop lines as detailed above and simple cutting the image into the prescribed tiles. Manually placed crop lines around or even within a tile will not be visible. Localized adjustments will be made against a reference ortho to assure brightness and tonal consistency. After the ortho rectification process, the image data is written into GeoTIFF and MrSID image file formats with registration files for delivery. All data will be delivered on external hard drives.

Acceptance Methodology

Ortho acceptance is a two-phase task. Aero-Metric performs the first phase by capturing high quality aerial photography. The images are reviewed against its histogram for tone matching and balancing. The DTM/DEM is reviewed against the image in stereo and checked against the aerotriangulation results through software.

The client performs the second phase. A visual inspection of the digital imagery is conducted by the client's personnel to review each image. It is also important to verify the calibration settings of the computer monitors used for this process. They should match, as closely as possible, to those of Aero-Metric monitors in order to achieve a true comparison. Verification is also conducted against the mapping coordinates from the quality control targets (if set by the client) to test the mapping. Coordinates, calculated by Aero-Metric are compared against the survey values, provided by the client, for an independent check. We expect this comparison to exceed project specifications.

Aero-Metric will correct all defects that fail to comply with the delivery specifications that fall within our responsibility.

Pilot Project

Both parties will jointly agree upon a Pilot project area. After the aerotriangulation has been completed and accepted by Franklin County we will proceed with the processing of data on the Pilot area tiles to produce digital orthophotos for your inspection, review and approval.

These images will be sent to Franklin County for review and acceptance. Once the Pilot area samples have been approved we will begin processing the remainder of images. We understand the tonal qualities approved in the Pilot area will become the standard for the remainder of the project.

Quality Standards

This project has been designed to conform to the National Map Accuracy Standards for 1"=100', 1"=200' and 1"=400' orthophoto production. We will exercise reasonable care and will conform to the standards of practice ordinarily used by the photogrammetric profession.

Schedule

Aerial Photography Schedule

We will acquire the aerial photography for this project, including airborne GPS control, within fourteen working days after notice-to-proceed and as ground and weather conditions permit.

We are committed to obtaining high quality photography for you within the allowable window of opportunity. We have designed your project with appropriate flight line orientation, negative scale, sidelap, and endlap for maximum flight safety and efficiency. We will be responsible for monitoring and selecting suitable weather to complete the photo acquisition for the project, and will take all reasonable steps to acquire photography for you in a timely manner. There are a number of considerations that affect our mobilization decisions including but not limited to weather, sun-angle, ground conditions, and leaf conditions. Therefore, please provide us with a notice-to-proceed or signed contract for aerial photography acquisition as early as possible.

Production Schedule

We expect production for this project, including aerotriangulation and related tasks, to be complete within one hundred fifty working days after successful aerial photography acquisition.

We are only able to provide a tentative schedule at this time and will work with you to finalize a mutually agreeable schedule for the remainder of the project. We will make a reasonable effort to maintain the agreed-upon schedule; however, should the project be interrupted by technical problems beyond our control, including control deficiencies, rescheduling may become necessary.

Deliverables

During the course of the project or upon completion, we will deliver the following items to Franklin County:

- Ground control survey report (1 set)
- Aerotriangulation report (1 set)
- DEM Files in AutoCAD2004 (1 set)
- Digital orthophoto raster image files at the three requested scales in TIFF with associated world files (1 set)
- Metadata in (1 set)
- Digital orthophoto raster image files in MrSID format with associated world files (1 set)

All digital files will be delivered on external hard drive unless otherwise requested.

Cost and Payment Terms

Compensation for the above services will be broken down to lump sum fees for the following services:

Service	Cost
1. Digital Orthophoto for 2.0' (156 tiles) and 0.5' GSD (73 tiles)	\$53,100.00
2. Digital Orthophoto for 1.0' (156 tiles) and 0.5' GSD (65 tiles)	\$62,130.00

Payments are due within 30 days of invoice date. Past due balances will be subject to a service charge at the rate of 1.5% per month.

Client Responsibilities

The successful and timely completion of this project is dependent upon a number of elements and work tasks, some of which involve participation by Franklin County. You will be responsible for designating a representative for the project who will have the authority to transmit instructions, receive information, and make timely decisions with respect to the services provided by Aero-Metric.

Aero-Metric Representative

Jim Kolarik and Miles D. Strain, Project Manager, will represent us during the performance of the services to be provided under this agreement. Each has the authority to transmit and receive instructions and make decisions with respect to the services. Miles D. Strain is authorized to commit the necessary resources towards completing the services described herein.

Authorization

If you would like to authorize Aero-Metric to proceed with the services described above and you agree with the fee schedule and payment terms, and the attached Standard Terms and Conditions which are part of this agreement, please return a signed original to Aero-Metric.

We look forward to working with you and your staff to complete this project in a timely and cost-effective manner. Should you have any questions, please call me at 763 420-9606 or email me at the address shown below.

Sincerely,

Aero-Metric, Inc

A handwritten signature in black ink that reads "Marvin E. Miller". The signature is written in a cursive, flowing style.

Marvin E. Miller, PLS, PPS, RPP, CP
Sr. Vice President
mmiller@aerometric-mn.com

Signature Summary

Proposed Project: Franklin County, Kansas
Proposal Number: 16811
Proposal Date: December 12, 2008

Proposed To: Franklin County
315 South Main Street
Ottawa, KS 66067

Submitted By: Marvin E. Miller, Vice President

Agreement: We agree that this proposal constitutes the entire agreement between Franklin County and Aero-Metric, Inc. as it relates to this project. We accept this proposal with its terms and conditions.

Franklin County

Aero-Metric, Inc.

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

Option Selected _____

Terms and Conditions

STANDARD OF CARE. Services shall be performed in accordance with the standard of professional practice ordinarily exercised by the applicable profession at the time and within the locality where the Services are performed. Professional services are not subject to, and Aero-Metric cannot provide, any warranty or guarantee, express or implied, including warranties or guarantees contained in any uniform commercial code. Any such warranties or guarantees contained in any purchase orders, requisitions or notices to proceed issued by Client are specifically objected to.

CHANGE OF SCOPE. The scope of Services set forth in this Agreement is based on facts known at the time of execution of this Agreement, including, if applicable, information supplied by Client. For some projects scope may not be fully definable during initial phases. As the Project progresses, facts discovered may indicate that scope must be redefined. Aero-Metric will promptly provide Client with an amendment to this Agreement to recognize such change, which shall be deemed approved if not objected to within 15 days of receipt by Client.

SAFETY. Aero-Metric has established and maintains corporate programs and procedures for the safety of its employees. Unless specifically included as a service to be provided under this Agreement, Aero-Metric specifically disclaims any authority or responsibility for general job site safety and safety of persons other than Aero-Metric employees.

DELAYS. If events beyond the control of Client or Aero-Metric, including, but not limited to, fire, flood, explosion, riot, strike, war, process shutdown, act of God or the public enemy, and act or regulation of any government agency, result in delay to any schedule established in this Agreement, such schedule shall be amended to the extent necessary to compensate for such delay. In the event such delay exceeds 90 days, Aero-Metric shall be entitled to an equitable adjustment in compensation.

In the event Aero-Metric is delayed by Client and such delay exceeds 30 days, Aero-Metric shall be entitled to an extension of time equal to the delay and an equitable adjustment in compensation.

TERMINATION/SUSPENSION. Either party may terminate this Agreement upon 30 days written notice to the other party. Client shall pay Aero-Metric for all Services, including profit relating thereto, rendered prior to termination, plus any expenses of termination.

In the event either party defaults in its obligations under this Agreement (including Client's obligation to make the payments required hereunder), the non-defaulting party may, after 7 days written notice stating its intention to suspend performance under the Agreement if cure of such default is not commenced and diligently continued, and failure of the defaulting party to commence cure within such time limit and diligently continue, suspend performance under this Agreement.

INSURANCE. Aero-Metric will maintain insurance coverage for Professional, Comprehensive General, Automobile, Worker's Compensation, and Employer's Liability in amounts in accordance with legal, and Aero-Metric's business, requirements. Certificates evidencing such coverage will be provided to Client upon request.

INDEMNITIES. To the fullest extent permitted by law, Aero-Metric shall indemnify and save harmless Client from and against loss, liability, and damages sustained by Client, its agents, employees, and representatives by reason of injury or death to persons or damage to tangible property to the extent caused directly by the willful misconduct or failure to adhere to the standard of care described in Paragraph 1 above of Aero-Metric, its agents or employees.

LIMITATIONS OF LIABILITY. To the fullest extent permitted by law, Aero-Metric's total liability to Client for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in any way related to the Project or this Agreement from any causes including, but not limited to, Aero-Metric's negligence, errors, omissions, strict liability, or breach of contract shall not exceed, either (a) the total compensation received by Aero-Metric under this Agreement, or (b) reperformance of the defective services by Aero-Metric at no cost to Client.

No employee or agent of Aero-Metric shall have individual liability to Client.

IN NO EVENT AND UNDER NO CIRCUMSTANCES SHALL AERO-METRIC BE LIABLE TO CLIENT FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES.

ACCESS. Client shall provide Aero-Metric safe access to any premises necessary for Aero-Metric to provide the Services.

OWNERSHIP AND REUSE OF PROJECT DELIVERABLES. All documents delivered by Aero-Metric to Client become the property of the Client. These documents and materials could include positive or negative film, contact prints and enlargements of aerial photography, digital map files, digital terrain/elevation models, maps, or inked tracings and/or all other visual impressions, whether recorded and/or delivered magnetically, electronically, optically or otherwise.

These documents and materials shall not be released or made available by Aero-Metric to any third party or used for other purposes at any time without the written approval of the Client.

Reuse of any documents or other deliverables, including electronic media, pertaining to the Project by Client of any purpose other than that for which such documents or deliverables were originally prepared, or alteration of such documents or deliverables without written verification or adaptation by Aero-Metric for the specific purpose intended, shall be at the Client's risk. Client agrees to defend, indemnify, and hold harmless Aero-Metric from all claims, damages, and expenses, (including reasonable litigation costs), arising out of such reuse or alteration by Client or others acting through Client.

MATERIAL ADVERSE EFFECT. This agreement may be amended if an event, change, or effect creates a material adverse effect upon the operation of Aero-Metric. Such material adverse effect may be created by, or be the effect of acts of, terrorism or war (whether declared or not declared) which materially impair Aero-Metric's ability to operate its business in accordance with the standard of professional practice ordinarily exercised by our profession and which formed the basis of this agreement.

AMENDMENT. This Agreement, upon execution by both parties hereto, can be amended only by a written instrument signed by both parties.

ASSIGNMENT. Except for assignments (a) to entities which control, or are controlled by, the parties hereto or (b) resulting from operation of law, the rights and obligations of this Agreement cannot be assigned by either party without written permission of the other party. This Agreement shall be binding upon and inure to the benefit of any permitted assigns.

STATUTES OF LIMITATION. To the fullest extent permitted by law, parties agree that, except for payment of fees due Aero-Metric and claims for indemnification, the time period for bringing claims under this Agreement shall expire one year after Project completion.

PREVAILING PARTY LITIGATION COSTS. In the event any actions are brought to enforce this Agreement, the prevailing party shall be entitled to collect its litigation costs from the other party.

NO WAIVER. No waiver by either party of any default by the other party in the performance of any particular section of this Agreement shall invalidate any other section of this Agreement or operate as a waiver of any future default, whether like or different in character.

NO THIRD-PARTY BENEFICIARY. Nothing contained in this Agreement, nor the performance of the parties hereunder, is intended to benefit, nor shall inure to the benefit of, any third party, including Client's contractors, if any.


SEVERABILITY. The various terms, provisions and covenants herein contained shall be deemed to be separate and severable, and the invalidity or unenforceability of any of them shall not affect or impair the validity or enforceability of the remainder.

AUTHORITY. The persons signing this Agreement warrant that they have the authority to sign as, or on behalf of, the party for whom they are signing.

By submission of this proposal, the undersigned certifies that it has the full authority of the Offeror to execute the proposal and to execute any resulting contract awarded as the result of, or on the basis of, the proposal.

I hereby certify that the attached proposal has been prepared in compliance with the specifications and that the quotations are valid for a period of 90 days.

Authorized Representative: Marvin E. Miller

Signature: 

Title: Sr. VP

Company Name: Aero-Metric, Inc.

Address: 13400 68th Avenue N

City, State, Zip: Maple Grove, MN 55311

Phone Number: 763-420-9606

Fax Number: 763-420-9584

E-mail Address: mmiller@aerometric-mn.com