

2007 Orthophotography

Medina County, Ohio

February 13, 2007

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BID NOTICE

Sealed bids will be received and opened by the Board of County Commissioners of Medina County, Ohio, at their office in the Administration Building, 144 North Broadway Street, Medina, Ohio 44256, at 1:30 p.m., Ohio Time, on **Tuesday, February 13, 2007** for the Aerial Photographic Work as outlined in the Specifications and Instructions to Bidders for said project.

Bid packet, including Instructions to Bidders, Specifications, and necessary forms may be obtained at the Office of the Medina County Engineer, Medina County Engineering Center, 791 W. Smith Road, Medina, Ohio 44256, by all prospective bidders between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, Ohio Time.

All bids must be delivered in a sealed envelope marked "2007 Orthophotography - Medina County" at the date and time set forth above.

Each bid shall be accompanied by a certified check from a solvent bank in the State of Ohio, or a bid bond executed by a surety company authorized to do business in Ohio, in the amount of five percent (5%) of the sum of the bid. Certified checks shall be made payable to the **Board of Medina County Commissioners**. The check or bond will be held as a guarantee that if the bid is accepted, the bidder will enter into a contract for the same.

The Board of Medina County Commissioners reserves the right to reject any and all bids.

By the order of the Board of County Commissioners of Medina County, Ohio.

Medina County Gazette:

Thursday, January 18, 2007  
Thursday, January 25, 2007

## PREFACE

Medina County is considering county-wide aerial photography to produce color digital orthophotography. This data will be used in the ongoing cadastral mapping program for the Medina County Geographical Information System (GIS).

The purpose of this Request for Bid is to solicit bids from qualified aerial surveying firms that demonstrate the abilities and equipment to be considered for the performance of the various tasks as outlined in the enclosed Specifications. As a result of this, Medina County intends to enter into a legal and binding contract with the successful firm that will undertake the necessary photogrammetric processes to achieve the required needs of this Request for Bid.

Inasmuch as the aerial photography will be utilized for the preparation of digital products, the specifications contained herein are intended to emphasize the extreme importance of acquiring the highest quality negatives. Accordingly, perfection in all areas including, but not limited to the navigation, exposure, handling, and processing of the film cannot be compromised.

2007 Orthophotography - MEDINA COUNTY, OHIO

INSTRUCTIONS AND CONDITIONS

General

Sealed bids for the work will be received by the Board of County Commissioners of Medina County, Ohio, at their office in the County Administration Building, 144 North Broadway Street, Medina, Ohio 44256, at 1:30 p.m., Ohio Time, on February 13, 2007, in accordance with Legal Notice duly published, at which time the bids will be publicly opened and read.

The bidders are responsible for the delivery of their bids. The bids shall be deposited at the address given above, prior to the time of the opening. Should a bid package be transmitted by mail, it shall contain an inner sealed envelope endorsed only with the title of the work being bid. Bids received after the time fixed for the opening will not be read and will be returned unopened to the bidder.

Bids shall be submitted only with all the forms furnished by the Medina County Engineer, including a non-collusion affidavit, a personal property tax verification affidavit, and Homeland Security form. Bids shall be sealed in an envelope plainly marked on the outside, "**2007 Orthophotography - Medina County.**"

Each bid must be clearly signed with the full name and address of each person, firm or corporation interested in it. In the case of a partnership, the firm name and address of each individual party must be given. In the case of a corporation, the bid shall be signed by an officer duly authorized to do so.

Bid Guarantee

Each bid shall be accompanied by a certified check on a solvent bank in the State of Ohio, or a bid bond in the amount of not less than five percent (5%) of the total amount bid.

Bid checks shall be made payable to the **Board of Medina County Commissioners.**

Bid bonds shall be issued by an approved surety company authorized to transact business in the State of Ohio. The bond shall meet in full the satisfaction of the Medina County Prosecutor.

The said check or bid bond shall be given as security that if the bid is accepted, a contract will be entered into, and the performance of said contract properly secured. The checks and/or bid bonds of all, except the two lowest and best bidders, shall be returned upon tabulation and evaluation of all bids. In the case of failure to enter into a contract, the check or bid bond of the lowest bidder shall be forfeited and surrendered to the County as the agreed amount of liquidated damages.

In the case of acceptance of a bid by the County, the check of the lowest and best bidder will be returned after the contract has been signed. The check or bid bond of the second lowest and best bidder will be retained until the lowest and best bidder has entered into a contract with the County. If he fails to do so, said check will be further retained until the second lowest and best bidder will have signed and properly secured the contract. In default thereof, the check or bid bond of the second lowest and best bidder will be forfeited to the County as the agreed amount liquidated damages.

Bid Forms

The bid shall include all the attached blank forms, which shall be completely filled out to contain all the required information and be properly signed.

#### Unacceptable Bids

No bid will be accepted from, or contract awarded to, any person, firm, or corporation that is in arrears or is in default to Medina County on any debt or contract, that is a defaulter as surety or otherwise upon any obligation to the County, or has failed to perform faithfully any previous contract with the County.

#### Withdrawal of Bids

No bid will be allowed to be withdrawn after it has been received by the Board of County Commissioners.

#### Rejection or Acceptance of Bids

The Board of County Commissioners reserves the right to reject any and all bids, and any part or parts of any bids. Further, the Board of County Commissioners reserves the right to waive any informalities in the bid. In awarding a contract, the County reserves the right to consider all elements entering the question of determining the responsibility of the bidder. Any bid which is incomplete, conditional, obscure, or which contains additions not called for, or irregularities of any kind, may be cause for rejection of the bid.

#### Bidder's Qualifications

The bidder shall submit with his bid, evidence that is satisfactory to Medina County covering the following:

- a) adequate record of experience in the area of the work being bid;
- b) financial ability to perform the work to its completion in accordance with the specifications;
- c) efforts and intent to provide equal employment opportunities.

#### Contract Documents

Instructions, Specifications, Bid, and other attachments, hereto become fully a part of the contract documents. Any requirements set forth in them shall be binding as if they were repeated in the contract forms.

#### Location of Work

The aerial flight, which forms the subject of the contract, is for the entire Medina County consisting of all seventeen (17) townships and incorporated areas, covering approximately 425 square miles. In addition a 1000' minimum buffer on all sides and at all corners of the County boundary is required.

#### Conditions of Work

The bidder's attention is directed to the necessity of examining the site and scope of tasks to be performed. The submission of a bid will be deemed an acknowledgment that this has been done and that the conditions and difficulties that may be encountered are fully and completely recognized and understood.

#### Taxes

The County of Medina is exempt from all sales, excise and transportation taxes, except State of Ohio gasoline tax. Tax exemption forms will be furnished if required. The unit prices bid shall be exclusive of such taxes and will be so construed.

Schedule

RFB Release	January 18, 2007
Question/Answer Deadline	February 1, 2007
Response to Questions	February 6, 2007
Bid Due	February 13, 2007
Negotiation and Finalization	February 23, 2007
Contract Award	March 2, 2007
Project Completion	October 2007

## SECTION 1

### Administrative Provisions

#### 1. Issuing Office

This Request for Bids is issued by the Board of County Commissioners of Medina County, Ohio, herein referred to as **Contracting Authority**. Contracting Authority shall be the sole point of contact for this RFB.

#### 2. Rejection of Bids

Contracting Authority reserves the right to reject any and all bids if they are deemed to be not in the best interest of the general public of Medina County, Ohio. They shall have the authority to award the contract to the firm best meeting the enclosed specifications and conditions.

#### 3. Questions Related to this Bid

Any questions arising from a review of specifications should be referred to:

Lowell Filak, Computer Operations Supervisor  
Office of the Medina County Engineer  
791 W Smith Road  
Medina, OH 44256  
(330) 723-9571  
[lfilak@medinaco.org](mailto:lfilak@medinaco.org)

who is herein named the **Technical Coordinating Officer**, according to the schedule in "Instructions and Conditions." This will allow time for the Technical Coordinating Officer to respond with clarification as well as informing the Contracting Authority and other bidders. All questions and answers will be posted on the Highway Engineer website at

[http://www.highwayengineer.co.medina.oh.us/gis/2007o\\_q\\_a.html](http://www.highwayengineer.co.medina.oh.us/gis/2007o_q_a.html).

#### 4. Contractor's Responsibility

The selected firm, hereafter referred to as the **Contractor**, will be required to assume full responsibility for the complete effort as required by this RFB. The Contracting Authority will consider the Contractor to be the sole point of contact with regard to all contractual matters.

#### 5. Subcontracting

It is the intent of these specifications to select one Contractor suitably staffed and equipped to perform the services outlined in these specifications. While the use of subcontractors is not discouraged, it is desirable for the Contractor's team to be made up of as few a number of firms as practical. This is to insure that the Contracting Authority receives work of consistent quality and workmanship.

#### 6. Assignment

The Contractor is prohibited from reassigning, transferring, conveying, subletting, or otherwise disposing of this agreement or its rights, title, or interest therein or its power to execute such agreement to any person, company, or corporation.

#### 7. Termination of Contract

The Contracting Authority reserves the right to terminate any contract entered into as a result of this RFB for reasons that might be termed "non-performance under the terms of the specifications."

#### 8. Permits and Clearances

The Contractor shall obtain all federal, state, and/or local licenses, permits and/or clearances necessary for performance of the contract. Should all or any part of the area to be photographed lie within controlled air space, the Contractor shall coordinate his sorties with the cognizant Air Route Traffic Controller. Should a military installation(s) and/or other classified area(s) lie within the area to be photographed, the Contractor may be required to visit the installation(s) to obtain necessary clearances and instructions.

#### 9. Progress Reports

Progress reports are to be emailed or transmitted by facsimile at the end of each week, or as requested, to the Technical Coordinating Officer until the aerial photography has been completed. These reports shall consist of the weather sequence by day, and the status of progress on the photography acquisition.

Thereafter, progress reports are to be emailed or transmitted by facsimile at the end of each month, or as requested, to the Technical Coordinating Officer until the project is fully executed and delivered.

#### 10. Right to Inspect

The Contracting Authority reserves the right to perform inspections of any or all equipment, materials, and technical data used or developed during the course of this project by the Contractor and/or his Subcontractors. The Contracting Authority also reserves the right to inspect the Contractor's and/or his Subcontractor's facility, conduct interviews of personnel currently and/or previously assigned to the project, and to inspect the quality and progress of any and all work performed.

#### 11. Copyright of Materials

Copyright to all aerial negatives acquired for this project, and derivatives therefrom, is vested in the Contracting Authority from the moment of exposure. Unless written arrangements are made with the Contracting Authority to the contrary, the Contractor shall not use the negatives for any purpose other than those specified in these specifications and in the performance of this project. Should any original or re-flight negatives, or derivatives therefrom be lost, damaged, and/or destroyed while in the possession of the Contractor, regardless of the reason for loss, damage, or destruction, the Contractor shall replace the items, without cost to the Contracting Authority, in the same quantity and quality as set forth in these specifications. The aforementioned stipulations will also apply to the digital files captured and/or processed in regards to this project.

#### 12. Basis of Payment

The Contractor shall be paid for satisfactory work accomplished according to the methods of measurement and unit amount agreed upon between the Contracting Authority and the Contractor at the time of executing the contract for performance of work set forth in these specifications.

## SECTION 2

### Technical and Cost Proposal

1. Bids submitted by prospective contractors shall specifically address, but not be limited to, the following topic  
Competency

Each bid shall include statements setting forth the prospective contractor's business, technical organization, a general outline of past experiences, and specific description of at least three projects similar in size and geographic location to that contemplated herein. Descriptions of similar projects shall include the name of the contracting authority, individual references within the contracting authority, including address and telephone number of each individual.

#### Aircraft, Crew, and Cameras

Each bid shall include a certified statement defining specific aircraft contemplated for use on the project and names of crew members to be assigned to individual airplanes. The specific camera to be carried by each airplane shall be clearly identified and the corresponding certificate of calibrations\*, stereo model flatness test, and letter of acceptance for said camera.

\*Certificates of calibration dated more than two years past are not acceptable for bid purposes.

#### Example Photography

For each combination of airplane type, crew, and camera type proposed, each bid shall include at least two examples of previous digital orthophotography work accomplished. Examples shall include, but not necessarily be limited to, six contact prints and a photo index (hard copy or digital) consisting of not less than six flight lines of 15 exposures per line.

Any bid which includes a color IR orthophotography proposal must be accompanied by a sample of said photography as set forth above.

#### Support Equipment

Each bid shall set forth a certified statement of the photographic support equipment, including processing, printing, and quality check equipment.

#### Ownership

The above certification shall include a certified statement as to the ownership and location of the aircraft, camera, and support equipment to be utilized in the furtherance of this project.

#### Scheme of Operation

Each bid shall include a complete narrative describing the prospective contractor's scheme of operation. The narrative shall include, but not necessarily be limited to, base of operations, which crew(s) will be assigned to the flying, conditions under which individual crews will leave the ground for the project site and procedures to be followed for flights, photography, processing, and production of final product(s).

#### Impact Statement

The prospective contractor shall include written certification that his currently-held projects will not interfere with the efficient and timely execution of the contemplated project.

#### Review of Bids

The Contracting Authority shall thoroughly review all bids submitted by the prospective contractors.

Requests for Clarification

The Contracting Authority may request clarification of prospective contractor's bid. Whenever such clarification has significant bearing on the review of the bid, and/or may have potential contractual implications, the Contracting Authority may request the clarification in writing.

Right to Reject

The Contracting Authority reserves the right to reject any and all bids based on:

- failure to submit a bid addressing all required topics;
- failure to submit samples in the quantity or quality required by these specifications;
- lack of competency or qualifications to perform in accordance with these specifications;
- previous unsatisfactory performance;
- nonpayment of financial obligations;
- failure to respond promptly to written requests for clarification;
- failure to supply information on required financial and security forms;
- misrepresentation and/or statements contrary to fact.

## SECTION 3 - SPECIFICATIONS

### General Requirements

The Contracting Authority specifically requests that proposed contractors provide bids based on specifications herein. The Contracting Authority will give consideration to possible alternative procedures provided that the original bid complies with the enclosed specifications.

The Contractor shall furnish all materials, labor, supervision, equipment, quality control, and transportation necessary to execute and complete all work required by these specifications. The Contractor's level of effort shall be such that the required aerial photography is completed within a single flying season in an expeditious and professional manner.

### Aerial Photography

#### Areas to be Photographed

Aerial photography of the entire County, approximately 425 square miles, 17 townships, is to be acquired for subsequent digital mapping and photographic reproduction purposes at various scales. Actual stereoscopic coverage shall extend beyond the mapping limits, as necessary, to reach ground control points that may be needed in an analytical triangulation solution, to be used to stereocompile a digital terrain model (DTM)\* and to cover the required 1000' buffer on all sides and corners of the County boundary.

\* The existing County DTM available for use in the project may only supply a 200' overlap in some areas.

### Time of Photography

Aerial photographs shall be secured when deciduous trees are barren and the ground is free of snow, so that well-defined images can be obtained. Photographs shall not be secured when the ground is obscured by haze, smoke, dust, or flood waters. Clouds and/or shadows of clouds shall not appear on any of the photographs. The solar altitude shall not be less than 25 degrees when aerial negatives are exposed. All photographs shall be secured during the Spring flying season of 2007, acceptable weather and ground conditions permitting.

### Aerial Photo Scale

The altitude above average mean ground elevation for the aerial photography shall be such that it is suitable to produce aerial negatives at 1"= 660'.

### Flight Plan

The Contractor's flight plan shall correspond with those established under previous contracts. Flight lines will be flown in an east to west direction continuously across the project area without interruption. The principal points of the first two and last two exposures of each flight strip shall fall outside the boundaries of the area to be mapped. All side boundaries shall be covered by a minimum distance required to meet the aforementioned buffer requirements. Flight lines for the project shall be complete and unbroken throughout their length. The rejection of any negative in a line may necessitate the rejection of the entire line.

### Film Type and Requirements

The aerial film shall be a fine-grain, high speed photographic emulsion on a dimensional stable base. Only one type of film may be used for all aerial photography throughout the entire project. The proposed film brand and type shall be indicated in the bid.

Outdated film may not be used under any circumstances.

Film used during any re-flights shall be subject to the same standards. The Contractor shall make every effort to acquire these exposures so that conditions during re-flight are as close as possible to conditions which existed during the original photography.

Aerial film exposed and unexposed, shall be stored and handled in accordance with the manufacturer's recommendations at all times.

#### Aerial Cameras

##### **Types**

The aerial camera\* to be used shall be a latest generation, 6" focal length model with FMC and an AWAR resolution rating of 90 or above, or equivalent.

The aerial camera must be capable of the following:

- a) ground resolution equal to or better than 1"
- b) generating four-band imagery from separate red, green, blue, and infrared bands
- c) supporting high geometric accuracy and forward motion compensation.

\* While it is the intent of Medina County to allow for the optional use of digital cameras for this project, no bid will be considered which does not include pricing on the primary conventional film process. In addition, a bid including digital orthophotography must be accompanied by a note indicating the exact camera model to be used on the project.

##### **Calibration**

Each camera and all magazines to be used shall have been calibrated within the last two years and must meet NAPP standards. The resulting calibration report shall be submitted to the Contracting Authority for approval prior to the use of the camera on this project.

#### Aircraft and Crews

##### **Aircraft Requirements**

All aircraft shall be maintained and operated in accordance with regulations of the Federal Aviation Administration and the Civil Aeronautics Board.

##### **Crews**

Individual crew members shall have two years or more experience in flying precise photographic missions for aerial surveys. Resumes of the crews (pilot and photographer) to be used for this project shall be included with each bid submitted. The Contracting Authority reserves the right to interview the proposed crews for the project prior to the time photography will be taken and to disapprove any crew member deemed incompetent on the basis of his record of past performance.

#### Photographic Mission

##### **Pre-Flight Check**

All aircraft and camera instruments, including fiducial marks and camera data block recording devices shall be in sound mechanical condition, checked, and operational prior to any photographic mission. The frame counter shall be set to zero prior to the commencement of exposing each new roll of aerial film.

##### **Forward Overlap**

Overlapping photographs in each flight line shall provide full stereoscopic coverage of the area to be mapped. Forward overlap in the line of flight on the 1"=660' photography shall average 60% and shall be not less than 55% or more than 65% at the mean terrain elevation.

**Side Overlap**

Side overlap between adjacent parallel flight lines shall average 33%. In addition, any point on the flight line shall not deviate from the flight plan location by distance greater than 10% of the width of coverage of the photograph.

**Flight Heights**

Departures from flight heights required to produce the final map scales shall not exceed  $\pm 5\%$ . All negatives exposed on a single roll of aerial film shall be secured from the same nominal flight heights.

**Crab**

While exposing aerial negatives, the camera shall be compensated for crab of the aircraft, with a resultant error not exceeding 3 degrees.

**Tilt**

The tilt within a single frame shall not exceed 4 degrees nor shall the difference in tilt between two overlapping frames within a flight line exceed 4 degrees. The average tilt for all negatives of the same nominal scale shall not exceed 1 degree.

Photographic Requirements**Exposure**

Exposure of the film shall be in accordance with the manufacturer's recommendations. The negatives shall be clear and sharp in detail, free from light streaks, and static marks, and of uniform tone degree of contrast to permit ground details to show clearly in dark tone areas, and high light areas as well as in the middle tones between light and dark, with particular emphasis on legibility in the shadow area.

**Shutter Speed**

All negatives shall be exposed using the fastest shutter speed possible when the aperture is set at its optimum value in consideration of the various factors involved, such as light and speed of aircraft.

**Exposure Logs**

Each roll of exposed aerial film shall be accompanied by a written log containing the following data:

- a) *Constant Data*
  - \* last names of crew member,
  - \* camera type and serial number,
  - \* lens type, serial number, and calibrated focal length, magazine number,
  - \* film type, emulsion number, and expiration date as shown on manufacturer's packaging,
  - \* filter type and number.
  
- b) *Variable Data for Each Flight Line*
  - \* altitude correction data (required only for each time the aircraft ascends or changes altitude),
  - \* brief description of atmospheric conditions,
  - \* aperture setting,

- \* shutter speed,
- \* nominal negative scale,
- \* area covered,
- \* date of exposure,
- \* compass direction,
- \* beginning and termination exposure numbers (as shown by the camera counter,
- \* start and stop times (local standard time),
- \* remarks including line complete, or if incomplete, the portion completed, blanks, run-up, overrun, rejections, and reasons for rejections.

### **Leaders and Spacers**

Each roll of aerial film shall have an unexposed leader at least five frames length (this unexposed leader will be used for sensitometric exposure during processing). Whenever a roll of aerial film is used in a discontinuous fashion such as from one day to the next, or from a morning flight to an afternoon flight, a spacer at least two frames in length shall be rolled forward just prior to the commencement of taking new photographs.

### **Breaks**

Every effort shall be made to avoid breaks within individual flight lines. Where breaks within a flight line are necessary, the entire flight line composed of the resulting segments shall meet all of the requirements set forth in these Specifications. Where breaks occur, these shall have an overlap of at least two frames. All negatives within a single flight line shall be acquired with the same aerial camera and with the camera oriented in the same direction.

### **Replacement Negatives**

Negatives acquired to replace rejected, damages, lost or otherwise destroyed negatives shall fully conform to these specifications. Replacement negatives shall be acquired with the same aerial camera(s) used to acquire the original negatives and shall be exposed as nearly as possible to the same day and lighting conditions as the original negatives.

### **Test Exposures**

The first 20 frames (or more) on each roll shall be reserved for test processing purposes. These test exposures shall be taken over terrain representative of that to be covered by the film on a given roll, and shall be taken immediately for exposing the forward portion of the film. The same altitude, relative aperture, and shutter speed as used for exposing the following frames shall be used for the test exposures.

## Film Processing

### **General Requirements**

As previously stated, this shall include development and fixation and washing and drying of all exposed aerial film and shall result in negatives free from light streaks, static marks, tears, scratches, abrasions, finger- marks, stains, spots, and blemishes of any kind which would interfere with the intended purpose. All negatives shall be of normal and uniform density and fine-grain quality. The film shall not be rolled tightly, stretched, or deformed in any way. At no time shall the film be subjected to extreme temperature and/or humidity changes.

### **Leaders and Splices**

Rolls and aerial film shall normally be left uncut. To minimize developing streaks at the ends of a roll, a leader shall be spliced to each end of each roll, prior to processing, in accordance with the recommendations of the manufacturer of the continuous film processor. Aerial film shall not be

spliced or trimmed within two frames of any usable frame. Splices shall not be made after processing is completed.

#### **Sensitometric Exposure**

Each roll of aerial film processed shall be subject to a 21-step intensity scale sensitometric exposure. The sensitometric exposures shall be placed within the unexposed leader of each roll. The location of the exposure within the leader shall be in an area free of fog and which will not be subject to anomalous development effects. All resultant intensity scales shall be measured and a complete sensitometry report shall be prepared for each sensitometric exposure.

#### **Continuous Processing**

All exposed aerial film shall be processed in a continuous processing machine. The processing chemistry shall be stabilized to the maximum practical extent to assure uniformity of the processing.

#### **Density Requirements**

Exposure and processing of each roll of aerial film shall result in negatives having the following density characteristics:

- a) base plus fog shall not exceed 0.20 density units;
- b) the minimum usable density as measured from the original aerial negatives shall be no less than 0.25 and maximum usable density no more than 1.50 after deducting base plus fog density;
- c) the average density range aim point should be 1.0.
- d) the minimum range aim point should be 1.0. The minimum density range should be no less than 0.55.

#### **Film Checking and Labeling**

Inspection and approval of the original photos by the Contracting Authority, to check for tilt, overlap, crab, cloud cover, scratches, snow cover, and proper sun angle, etc. must be carried out before the film is used for the creation of digital orthophotos.

#### **Navigation and Image Quality**

Each roll of aerial film shall be processed as soon as possible after it is exposed. Navigation of the flight lines and image quality shall be quick-checked for compliance with these specifications.

#### **Re-flights**

Re-flights shall be immediately ordered for the purpose of securing replacement negatives for all frames which fail to meet minimum standards set forth in these specifications, provided ground conditions have not yet terminated the photographic "season".

#### **Labeling**

All original and replacement negatives shall be labeled with the date of exposure (military designation), project identification code, flight line number, and exposure line number in this exact sequence when read from left to right. The labeling of the aerial negatives shall appear just inside the western edge of the format. Negative numbers shall be consecutive within each flight line. All annotations shall be 0.25 inch in height and shall render easily read, sharp and uniform letters and numbers on all derivatives produced from the annotated negatives.

#### **Spools and Containers**

Rolls of original negatives shall be wound on spools of the same kind as those originally supplied with the film. Each roll of film shall be contained within a plastic container, not to exceed 6

inches in diameter. Each container shall contain no more than 500' of film, and shall be the property of the Medina County Engineer's Office. Each container shall be labeled clearly with the following:

- a) Medina County Engineer's Office
- b) the name of the contractor
- c) date of the photography
- d) flight and exposure numbers (sequential number of the first and last exposures)
- e) model and serial number of the camera
- f) model, serial number, and calibrated focal length in millimeters of the camera lens
- g) film roll number
- h) the approximate scale of the photographic negatives.

#### **Contact Prints**

Contact prints shall be trimmed to 9" x 9", furnished on medium weight paper approved by the Contracting Authority. Outdated emulsions may not be used under any circumstances.

Contact prints shall be of uniform tone and density and such a degree of contrast that all details of the negatives will show clearly both in the shadows and the highlights as well as in the half tones between shadows and the highlights. All prints shall be clean and free from chemicals, stains, blemishes, uneven spots, light fog or streaks, static marks, and other blemishes which would interfere with their intended purposes, and shall be delivered in smooth and flat condition.

Extreme care will be exercised to prevent lint from collecting on the original negatives and will be clear and sharp in detail, and have uniform tone and a degree of contrast permitting ground details to show clearly in dark-toned and high light areas, as well as the middle tones between the dark and light, with particular emphasis on legibility in the shadows.

#### **Exposure Station Index Map Data**

The Contractor will be responsible to deliver the following GIS data layers in Arc/INFO Export format to facilitate the creation of any needed index maps.

Photo centers shall be accurately plotted and attributed with:

- a) flight line number,
- b) exposure line number (ascending from west to east).

Each flight line shall be plotted from line start point to finish point and attributed with:

- a) its assigned line number,
- b) altitude,
- c) date of flight.

All control points shall be accurately plotted and attributed with:

- a) station designations,
- b) computer designations (if different),
- c) orders of accuracy.

The ortho tile index polygons shall be plotted and attributed with:

- a) image file name.

#### **Orthophotography**

Color digital orthophotos will be provided in uncompressed TIFF format using an agreed upon tiling scheme similar to previous projects.

Files should be delivered in ½ foot pixel resolution county-wide and follow existing file naming conventions.

Each digital orthophotography file should be rectified to match with the aerial triangulation data and it's most current DEM data.

All images shall be radiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinction between them (no hard edges or seam-lines between tiles) A County-wide orthophoto product that is free of out-of-focus imagery, image smear, dust marks, scratches, or inconsistencies in tone and density between individual orthophotos and/or adjacent tiles is to be delivered.

The Contractor must provide orthophoto imagery for a prototype area as designated at the time of Negotiation and Finalization, to be used as the measure for image quality, tone match and color balance approval from Technical Coordinating Officer before delivery of the final product.

If the Contractor chooses to bid on the optional color IR item, the infrared (band 4) pixel resolution is not to exceed 2 feet.

#### Ground Control Specifications

##### **Recovery of Existing/Establishing New**

Sufficient horizontal and vertical control surveys shall be established by the Contractor to support the subsequent production of contact prints, digital terrain models, topographic, and photogrammetric mapping. The Contractor shall recover any existing control, establish new control, if necessary, and position targets prior to the aerial mission.

##### **Estimate of Requirements**

In response to these Specifications, the Contractor shall indicate the estimated total number of horizontal and vertical control points that shall be required to satisfy the project requirements. The Contractor shall also provide a detailed description of the equipment and methods to be used to complete the horizontal and vertical control survey work in their Technical Plan of Operations.

##### **Monumentation**

At the Contracting Authority's option, horizontal and vertical control points may be monumented by the Contractor in the field with permanent monuments. Any additional monumentation that is suggested shall be indicated as such and included in this bid as an alternative option.

##### **Existing GPS**

The Contractor shall make maximum use of the control information from the 1993 GPS control survey, as well as the 2000 GPS control survey densification project, and other existing horizontal and vertical control by contacting NGS or other agencies as appropriate.

##### **Horizontal Control**

All new horizontal control that is placed for this project, if more is required, should be to a minimum accuracy level of NGS Third Order. All horizontal control shall be established by appropriate GPS technology, or by traverse, as necessary. Federal Geodetic Control Subcommittee standards for instrumentation, field observations, and data reduction shall be followed as applicable to a minimum Third Order survey.

All horizontal ground control shall be determined in the Ohio State Plane Coordinate System (North Zone 3401), using the North American Datum (NAD) 1983. All final control shall be identified in geodetic coordinates (NAD83) of latitude and longitude and in feet. The U.S. survey foot shall be used for all meter to feet conversions.

### **Survey Methods**

The proposed contractor shall specify the techniques required for use in establishing horizontal control for this project. Where GPS is used, the number of units available should be indicated in The Technical Plan of Operations, as well as the length of observing time planned for each station. The current NGS "Geodetic Survey Standards and Specifications for Geodetic Surveys Using GPS Relative Position Techniques" shall apply.

The Contractor shall be required to submit a report indicating the location and characteristics of the existing control points that have been recovered and utilized. This report shall contain a map showing the locations of all existing and planned control points intended for aerial triangulation use. Additional, non-targeted horizontal control established after the aerial photography should be done only with prior approval of the Contracting Authority.

The methodology and all costs associated with the recovery of the existing points and establishing any new permanent monuments (if required) must be itemized and described in detail. At the completion of ground control activities, the Contractor must submit a Ground Control Report on the GPS control survey network. The contractor shall furnish a schematic control diagram of the survey records on a photo index, for all basic horizontal and vertical control pertinent to this project. It shall also show all traverse lines with their designations to include the beginning and end points.

An Arc/INFO Point coverage of the ground control used shall also be submitted. The diagram should be combined with field notebooks as one report, tying the information together.

### **Field Notebooks**

Field notebooks shall be carefully and neatly prepared, identified, indexed, and preserved. All data regarding the establishment and extension of horizontal and vertical control, including descriptions of all established and recovered monuments shall be recorded.

Where existing control points are recovered by the Contractor in extending the basic control, the field notebooks shall contain the following:

- a) information as to the general condition of the recovered mark;
- b) the original description;
- c) exact letter and numbers stamped (not cast in) on the mark and amended description (if applicable);
- d) additional tie data (if any);
- e) a sketch of the location as appropriate to facilitate future recovery.

## Work-site Maintenance and Procedures

### **Responsibility**

Contractor's employees and subcontractors shall perform operations and maintain the work-site in a neat and orderly manner. The Contractor shall be responsible for removing any waste material from the work-sites involved including targeting material within a reasonable time frame. The

Contractor shall not store materials on County property without the written permission from the Contracting Authority.

**Right-of-Ways**

The Contractor shall be allowed to conduct field operations at any time within the road right-of-way in rural or commercial areas provided the road is open for normal use. During field operations within road right-of-ways or when a field survey vehicle is parked within a road right-of-way, the contractor shall observe the laws and regulations governing such operations.

**Time of Day**

The Contractor shall only perform field operations within (or adjoining) residential subdivision areas during daylight hours unless written approval is received from the Contracting Authority to conduct operations at night. Monuments may be set with power tools only during daylight hours.

**Land Access**

Access to Public and Private Land - The Contractor shall comply with all statutory provisions for general entry upon property by surveyors.

Aerotriangulation

The contractor shall perform fully analytical or softcopy aerotriangulation to densify and check the project ground control and to relate the aerial photography to the control.

Immediately upon completion of all aerial triangulation work the Contractor shall prepare formal aerial triangulation reports to be submitted to the Contracting Authority. At a minimum, the reports will include a description of the following:

- a) Aerial Triangulation Results;
- b) All misclosures at ground control points with and without use of checkpoints;
- c) Computer printout of the final adjusted aerotriangulation solution to horizontal and vertical ground control. The printout should contain the final State Plane Coordinates for all ground control points, passpoints, and checkpoints;
- d) Identification of all points that were included in the initial solution and were subsequently discarded, with an explanation of the reasons for being discarded;
- e) Identification of the weighting factors applied to all points used in the final solution;
- f) Coordinate data in comma delimited ASCII format.

Narrative - The reports shall also include a brief narrative including:

- a) procedures and computer programs used;
- b) Root-mean-square error summaries will be given for bundle adjustment photographic measurement residuals and misclosures at control points;
- c) Where significant variances are encountered at control points, steps taken to analyze such variances and to rectify the discrepancies will be fully described. Finally, the report shall contain a statement by a certified photogrammetrist that the aerial triangulation solution will provide sufficient control for data compiled in accordance with ASPRS Accuracy Standards for large-scale Class 1 maps at 1"=100'.

Quality Control

The Contractor must provide the Contracting Authority with a description of the quality control methods and procedures used in all aspects of the project. Describe what field verification measures are carried out to ensure that the products meet said ASPRS Standard. Verification

should also be performed for map completeness to ensure that no gaps exist in the digital coverage.

### Deliverables

- 1) 1 copy - Existing control point location and characteristic report.
- 2) 1 copy - Formal Aerial Triangulation Report (FAAT) along with digital file in comma-delimited ASCII format.
- 3) Photo center point layer in Arc/INFO Export format.
- 4) Flight line arcs layer in Arc/INFO Export format.
- 5) Orthophoto tile index polygon (rectangle) layer in Arc/INFO Export format.
- 6) 1 copy each, GPS control survey network and ground control report along with digital Arc/INFO point coverage of ground control.
- 7) 1 set - Color 9x9 contact prints from sixty percent (60%) exposures at a negative scale of 1"=660'
- 8) 1 set – Color digital orthophotos of the entire County in tiff format, delivered on CD or DVD.
- 9) **(OPTIONAL)** 1 set – Color digital infrared orthophotos of the entire County in tiff format, delivered on CD or DVD.

# **2007 Orthophotography Medina County, Ohio**

## **Required Forms**

Bidder's Acknowledgment  
Non-Collusion Affidavit  
Personal Property Tax Verification Affidavit  
Homeland Security DMA Form

**2007 Orthophotography - MEDINA COUNTY, OHIO**

I have read the entire Request for Bid, addenda, and changes if any, and I fully understand its contents, have submitted all data requested herein, and acknowledge that the fees above notwithstanding are for the delivery of all items expressly required in the specifications within the request.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Date: \_\_\_\_\_

2007 ORTHOPHOTOGRAPHY - MEDINA COUNTY, OHIO

NON-COLLUSION AFFIDAVIT

STATE OF OHIO )  
COUNTY OF MEDINA \_\_\_\_\_) ss.

\_\_\_\_\_, being first duly sworn, says that he/she  
is \_\_\_\_\_ of \_\_\_\_\_,  
(sole owner, partner, president)

the party making the foregoing proposal or bid; that such bid is genuine, and not collusive or a sham; that such bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder or person, to put in a sham bid, or that such other persons shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant element of said bid price, or of that of any other bidder, or to secure any advantage against the county of Medina or any persons or persons interested in the proposed contract, and that such bidder has not, directly or indirectly, submitted this bid, or the contents thereof, or divulged information or data relative thereto, to any association or to any member or agent thereof.

\_\_\_\_\_  
Affiant

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 2007.

[seal] Notary Public in and for

\_\_\_\_\_

\_\_\_\_\_ County, State of Ohio

My Commission Expires: \_\_\_\_\_

**PERSONAL PROPERTY TAX VERIFICATION AFFIDAVIT**

Now comes the successful bidder, \_\_\_\_\_, upon a competitive bid for \_\_\_\_\_, on the \_\_\_\_\_ day of \_\_\_\_\_, 2007, and first being duly sworn deposes and says that he/she (was or was not) charged at the time the bid was submitted with any delinquent personal property taxes on the general tax list of personal property of Medina County.

**(If applicable)**, the amount due and unpaid delinquent personal property tax \$\_\_\_\_\_.

Further Affiant Sayeth Naught.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2007.

\_\_\_\_\_  
Notary Public, State of Ohio

[Seal]

My Commission expires: \_\_\_\_\_

**(THIS AFFIDAVIT MUST BE COMPLETED BEFORE A CONTRACT MAY BE ENTERED INTO UNDER OHIO REVISED CODE CHAPTER 5719.042)**