

**Medina County Digital  
Ortho and Land Use/Cover  
GIS Project 2004**

**Request For Proposals**

**October 24, 2003**

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# 1.0 Introduction

## 1.1 Summary

Medina County, Ohio, located in north central Ohio is seeking qualified firms for the production of 4 data products.

1. Color Digital Orthophotography
2. Updated Land Use/Cover
3. Wetlands (Forested/NonForested)
4. Impervious Surfaces

Medina County has a land area of approximately 423 sq. miles and a population of approximately 160,000. The County Engineers office oversees GIS functions for the County which includes warehousing and maintenance of existing digital orthophotos, cadastral data sets, and various other GIS data layers. The County currently utilizes ESRI's ArcInfo (7.x coverages) and ArcView (shapefiles) software for its GIS functions on numerous workstations throughout the Engineer's office and various other departments within the County.

## 1.2 Purpose

The Medina County Engineer's office is seeking an update to their County Land Use/Cover GIS data file, development of a wetlands data layer, and development of an impervious surface data layer. In addition to the Engineering department, Planning Services and the Soil & Water Conservation District are also in need of an updated Land Use/Cover file. The file will be an integral part of comprehensive planning for Planning Services. The Soil and Water Conservation District will be using the data for non-point source pollution runoff analysis. It has been determined that updated color digital orthophotography shall be used in the delineation process of these three data layers. The digital orthophotography will have residual benefits in terms of supplying the County and its constituency with updated imagery to be used in various processes and applications.

## 1.3 Schedule

RFP Release	October 24, 2003	
Question and Answer Deadline	November 7, 2003	
Response to Questions	November 11, 2003	(No later than)
Proposal Due	November 14, 2003	
Evaluation	November 21, 2003	
Short List Selection	November 24, 2003	(if needed)
Negotiation and Finalization	December 18, 2003	(no later than)
Contract Award	TBD	
Project Completion	TBD	

## 1.4 Contact Information

All questions arising from review of this RFP should be directed to:

Lowell Filak  
Medina County Highway Engineer's Office  
791 W. Smith Rd.  
Medina, OH 44256  
330-723-9571  
330-723-9661 (fax)  
[lfilak@medinaco.org](mailto:lfilak@medinaco.org)

Contact with any other party within Medina County in regards to this RFP could be cause for disqualification and/or result in delays of answers.

## 2.0 General Provisions

### 2.1 Issuing Office

This Request for Proposal 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 RFP.

### 2.2 Contractor's Responsibility and Subcontracting

Given the diversity of data products required for this project, partnerships and/or subcontracting is expected. The selected firm hereafter referred to as the **Contractor**, will be required to assume full responsibility for the complete effort as required by this RFP. The Contracting Authority will consider the Contractor to be the sole point of contact with regard to all contractual matters and one firm shall act as primary Contractor.

### 2.3 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.

### 2.4 Termination of Contract

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

### 2.5 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.

### 2.6 Right to Inspect

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

### 2.7 Copyright of Materials

Copyright to all aerial negatives acquired for this project, and derivatives therefrom, are 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.

### 2.8 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.

#### 2.9 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 upon any debt or contract, or 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.

#### 2.10 Withdrawal of Bids

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

#### 2.11 Bidders Qualifications

The Bidder shall submit with his proposal, evidence that is satisfactory to the County covering the following:

1. adequate record of experience in the area of the work being done;
2. financial ability to perform the work to its completion in accordance with the specifications;
3. efforts and intent to provide equal employment opportunities.

#### 2.12 Contract Documents

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

#### 2.13 Location of Work

The aerial flight and data layers which forms the subject of the contract is for the seventeen (17) townships of Medina County, Ohio.

#### 2.14 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 proposal 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.

#### 2.15 Taxes

The County of Medina is exempt from all sales, excise and transportation taxes, except State of Ohio gasoline tax. The unit prices bid shall be inclusive of all such taxes and will be so construed.

#### 2.16 Requests for Clarification

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

#### 2.17 Rejection of Proposals

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

- ◆ Failure to submit a proposal 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;
- ◆ Misrepresentation and/or statements contrary to fact.

## **3.0 Scope of Work Specifications**

### **3.1 Color Digital Orthophotography**

#### ***Control***

##### ***3.1.1 Ground Control***

Two aerial missions have been flown in the County since 1998 related to the production of digital orthophotography and contours. The County utilized approximately 40 survey monuments as well as several other survey points in these two missions. The coordinates are in State Plane Coordinate (SPC) System, North American Datum (NAD) 1983, North American Datum Vertical (NAVD) 88, North Zone, Survey Feet. Detailed documentation for each control point will be made available to the contractor awarded the project.

##### ***3.1.2 Airborne GPS Control***

The Bidder shall use airborne GPS technology and/or GPS triggered camera shutter control.

##### ***3.1.3 Control Map***

All coordination of ground control targeting will be the responsibility of the Contractor. At the completion of ground control activities, if any new control points are needed, the Contractor must submit a Ground Control Report on the GPS control survey network.

#### ***Aerial Camera and Photography Acquisition***

##### ***3.1.4 Aerial Photography***

Since the digital orthophotography will be used for delineation of data products specified elsewhere in this document, maximum clarity will be needed. An evaluation was performed to determine highest image quality vs. budgetary constraints and it has been determined, at a minimum, a negative contact scale (NCS) of 1" = 660' is required.

##### ***3.1.5 Camera***

The aerial camera shall be for precision aerial mapping of equivalent or better quality than a Leica RC-30, equipment with a low distortion, high resolution lens. The calibrated focal length of the lens shall be 153 millimeters plus, or minus 3 millimeters (6" focal length). The camera shall expose a 9" x 9" size negative and produce a minimum of eight fiducial marks in each negative. No glass shall be permitted between the lens and the film. The camera system must be equipped with a Forward Motion Compensating (FMC) device.

##### ***3.1.6 Calibration***

Each camera lens unit shall have been calibrated, tested, and certified by the United States Geological Survey (USGS). The certificate shall show that the camera has been calibrated within three years of completion of the photography. The contractor conducting the photo mission shall hold a valid calibration certificate and shall supply a copy to the client along with acceptable ranges for each specification.

##### ***3.1.7 Camera Mount***

The camera shall be installed in a mount that attenuates the effects of aircraft vibration. The mount should be regularly serviced and maintained.

The camera shall be mounted vertically in the aircraft in a mount designed to isolate the camera from vibration of the aircraft. Angular vibration of the camera shall be reduced to such a level so as to have no significant detrimental effect on resolution.

##### ***3.1.8 Filters***



Only optical filters provided by the lens manufacturer meeting the same optical specifications shall be used. The light fall-off cameras having an angle of view larger than 60 degrees shall be compensated by a graded (antivignetting) filter.

### 3.1.9 Time of Photography

Photography is to be performed in spring of 2004 prior to onset of spring vegetation. General requirements of aerial photography shall be secured based on the intended use of the photographs as stated in the specification. In general, photography shall not be secured when the ground is obscured by haze, snow, dust, floodwaters, or environmental factors that may obscure ground detail. All efforts should be taken to minimize the exposure to smoke plumes from fires. Clouds and/or shadows of clouds shall not appear in the photograph. The solar altitude shall not be less than 30 degrees when aerial negatives are exposed. It should be, therefore, flown generally between the hours of 10AM and 2PM local time.

### 3.1.10 Aircraft and Crews

All aircraft shall be maintained and operated in accordance with regulation of the Federal Aviation Administration and the Civil Aeronautics Board. The recommended FAA preflight inspection of the aircraft and instruments must be performed prior to each photographic mission. Aircraft shall have a service ceiling (with operating load of crew, camera, film, oxygen and other required equipment) not less than 5% above the highest altitude necessary to achieve the smallest photographic scale required. If the project is in controlled air space, the appropriate Air Traffic Control Center (ARTCC) must be contacted. If any military bases or secured government installations are within the project area, the contractor must contact the agency(s) and comply with security regulations of this or any other sensitive area.

Individual crewmembers shall have two years or more apprenticeship in flying photographic missions for aerial surveys. In addition, it is desirable crewmembers have had meaningful prior experience with the same type camera and aircraft to which they are assigned.

### 3.1.11 Photographic Mission

The camera should be checked to be sure it is properly secured onto the mount and that all cable connections are tight. The camera lens, filters, and camera port must be inspected to assure that the surfaces are not scratched, etched, or discolored and that they are free of foreign particles and condensation. The camera magazine must be clean and firmly seated on the camera. The transport system must be operating properly and the correct information entered into the data block recording devices. The exposure, frame counter number, and fiducial lights must be set for the sensitivity of the film type being used in the camera. Cycle the camera to assure the drive mechanism and shutter are operating smoothly and complete the basic data sections of the photographic flight report.

### 3.1.12 Overlap

Consecutive photos in each flight line shall have an average forward overlap of 60% ( $\pm 2\%$ ) to ensure stereoscopic coverage. Individual forward overlap less than 55% or more than 65% in one or more exposures may be cause for rejection of the flight strip, or a portion thereof.

### 3.1.13 Sidelap

Sidelap between adjacent parallel flight lines shall be 30%  $\pm 10\%$  at the mean elevation of the terrain. In addition, any point on the flight line as flown shall not deviate from the flight plan location by a distance greater than 10% of the width of coverage of the photograph.

### 3.1.14 Altitude

Departures from flight heights required to produce the desired photo scale shall not exceed -2% or +5% unless changed by Air Route Traffic Control Centers.

### 3.1.15 Crab

Changes in the course of the aircraft between successive overlapping photographs within a flight line shall not exceed 3 degrees. While exposing aerial photography, the camera shall be compensated for crab of the aircraft, with a resultant error not exceeding 3 degrees. Apparent crab is defined as the angle between a line joining fiducial marks in the direction of flight and the line between the indicated principal point and the conjugate image of the indicated principal point of the adjacent photograph within the same line of flight.

### 3.1.16 Tilt

The tilt within a single frame shall not exceed 4 degrees nor shall the difference in tilt between two consecutive 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.

### 3.1.17 Exposure

Exposure of the film shall be in accordance with the manufacturer's recommendations and with a goal toward achieving density requirements. The negatives shall be clear and sharp in detail, free from light streaks and static marks, and of uniform tone and degree of contrast to permit ground details to show clearly in all scene reflectance, with particular emphasis on pattern recognition in the shadow areas. All film shall be exposed using the fastest shutter speed possible when the aperture is set at its optimum value in consideration of the optical resolution and image motion.

### 3.1.18 Film Documentation

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

#### 3.1.19 Static Data

- ◆ last names of crew members
- ◆ camera type and serial number
- ◆ lens type, serial number, and calibrated focal length, magazine number
- ◆ film type, emulsion batch, roll, cut, and slit numbers and expiration date as shown on the manufacturer's packaging
- ◆ filter type and number

#### 3.1.20 Variable Flight Line Data

- ◆ altitude correction data (required each time the aircraft ascends or changes altitude)
- ◆ brief description of atmospheric conditions
- ◆ aperture setting
- ◆ shutter speed
- ◆ nominal photo scale
- ◆ area covered
- ◆ date of exposure
- ◆ direction of flight
- ◆ % of forward overlap
- ◆ beginning and ending exposure numbers (referenced to the camera counter)
- ◆ start and stop times (local standard time)

#### 3.1.21 Remarks Including

- ◆ complete or incomplete flight line, blank frames, run-off, rejections, and reasons for rejections
- ◆ any unusual situation that occurs during the flight line

Each roll of aerial film shall have an unexposed leader at least five frames in length. 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 four frames in length shall be rolled forward just prior to the commencement of taking new photographs.

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 Bid Specifications. Where breaks occur, these shall have an overlap of at least four frames to ensure a stereo model of overlap or tie. All photos within a single flight line shall be acquired with the same aerial camera and with the camera oriented in the same direction.

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

#### 3.1.22 Preliminary Checks

Each roll of aerial film shall be processed within 24 hours after it is exposed. Navigation of the flight lines and image quality shall be quick-checked for compliance with these Bid Specifications.

#### 3.1.23 Reflights

Reflights shall be immediately (weather permitting) ordered for the purpose of securing replacement exposures for all frames which fail to meet minimum standards set forth in these Bid Specifications, provided ground conditions have not yet terminated the photographic "season." Inspections of aerial photography should be performed immediately after the aerial photo mission. The Contractor shall provide the County a quality control (QC)/inspection report for review within 2 weeks of mission to review for all deficiencies. Unacceptable aerial photography (as determined by the County) shall be reflown by the contractor at no additional cost to the County, with the reflight coverage overlapping the acceptable photography by at least two stereomodels.

### ***Aerial Film and Lab Procedures***

#### 3.1.24 Aerial Film

The type of film to be used shall be unexpired and have a dimensional stable polyester base. Only one type of film shall be used throughout the entire project, and the film type shall be approved by the Medina County Engineer's office in advance. The brand and type to be used shall be indicated in the proposal.

#### 3.1.25 Color Film

Emulsions shall be sensitive to the entire visible spectrum with an extended red sensitivity. Extreme care shall be exercised to insure proper exposure to minimize vignetting due to differential exposure. This differential exposure shall not exceed that which would result from a basic 1/3 stop difference in exposure.

The conditions of the film stock to be used shall be such that when the unexposed film is processed:

1. It shall be free of stains, discoloration, or brittleness that can be attributed to aging or improper storage; and,
2. The base-plus-fog density for all negative films and the minimum density for all color reversal films shall conform to the manufacturers predicted density levels.

#### 3.1.26 Storage and Handling

Storage and handling of all photographic film shall be in accordance with the manufacturer's recommendation. All aerial film shall be stored in the original containers to prevent any exchange of moisture between the rolls and their surroundings up to the time they are exposed. The film shall not be rolled tightly on spools or in any way stretched, buckled, distorted, or exposed to direct sunlight or other sources of heat.

The container for each roll of aerial film shall be made of plastic, shall not exceed 10" in diameter, shall contain no more than 500' of film, and shall be the property of Medina County. It shall be clearly labeled with the name of Medina County; name of the contractor; date of the photography; flight and exposure numbers (sequential number of the first and last exposures); type and serial number of the camera; the type, serial number and calibrated focal length in millimeters of the camera lens; film roll number and approximate scale of the photographic negatives.

#### 3.1.27 Processing and Drying

All film shall be processed using the manufacturer's recommended process-monitoring system. All film should be processed through an automatic film processor that is process controlled to insure target density conformance from day to day processing.

Processing and drying of film shall be carried out without affecting the metric quality. At no time shall the film be subjected to extreme temperature and humidity changes.

The processed film shall be free from chemicals, stains, tears, scratches, abrasions, watermarks, finger marks, lint, dirt, light streaks, static marks, and any other physical defects that would interfere with the intended purpose of the photography.

#### 3.1.28 Image Quality

The imagery on the aerial film shall be clear and sharp and evenly exposed across the format. The film shall be free from clouds, cloud shadows, haze, snow, shadows, crimps, scratches, and any other blemishes which interfere with the intended purpose of photography. Allowances will be made for unavoidable shadows or reflectance from water bodies. If the imagery is obviously degraded, the original film shall be rejected for poor image quality.

Density measurements will be taken on processed film using a transmission densitometer with a 2mm probe. Readings will be made no closer than 1-1/2" from the image edge.

Base plus fog shall be measured between and at the edges of the negative frame, and conform to the manufacturers' predicted density value. The minimum usable density shall be no less than 0.30 and maximum usable densities no more than 1.50 after deducting base plus fog density. The average density range aim point should be 1.0 and the minimum no less than 0.55. The camera instrument panel and all fiducial marks shall be sharp and clearly legible on all processed film.

#### 3.1.29 Exposed Film

The exposed/processed aerial film should be delivered in accordance with the stipulations of delivery schedule.

The exposed aerial film is the property of Medina County and shall be stored free by the Contractor until such time as needed. All aerial film will be stored and properly safeguarded according to proper archival procedures for the storage of photographic material. Medina County shall agree to these procedures prior to storage.

Each processed roll or partial roll of aerial film shall be kept in roll form, on the spool, and in the metal or plastic container supplied by the film manufacturer. Rejected exposures shall not be removed from any roll.

### 3.1.30 Flight Line Map Index

The flight line map and photo spot index will be delivered in soft copy format. This data shall be delivered in ESRI 7.x export (.e00) files:

1. Line file depicting the flight lines for 1" = 660' NCS. Attributes attached to each line will include direction and date of flight.
2. Point file with the x,y coordinate of each photo center point (nadir). Attributes attached to each point will include x-coordinate, y-coordinate, roll number, flight line, and frame number.

The center point of each frame of photography shall be accurately plotted to represent as nearly as possible its true location and connected by a line representing the actual flight line. General metadata shall be included with the above data in a text "readme" file that will contain information including, but is not limited to: date of flight, contractor, film type, camera serial number, altitude, scale of photography, general description why it was captured, and any comments.

### 3.1.31 Contact Prints

One complete set of original aerial contact prints shall be made on an automatic dodging printer on medium weight resin-coated paper on which ink and pencil can be used on both sides. The contact prints shall be delivered to Medina County within four (4) weeks of flight mission for review.

All prints shall be clear and free from chemical stains, blemishes, uneven spots, air bells, light streaks or fog, and other defects that would, in the opinion of the owner, interfere with their intended purpose. Prints shall be delivered to the owner in a smooth, flat, and usable condition.

### 3.1.32 Film Diapositives

The County recognizes different methodologies are used for generating stereo models. If diapositives are to be used then the following specifications apply.

Diapositives shall be made on an automatic dodging printer on stable base 9-1/2" x 9-1/2" sheet film, 0.007 inches thick, and specifically intended for diapositive use. The image portion of the aerial negative shall be centered on the diapositive. The diapositives shall be delivered to the owner in accordance with the delivery schedule and delivery address.

The photographic emulsion shall be of fine grain and have a suitable light sensitivity range and contrast for the making of diapositives from the aerial film exposed under the contract. Outdated materials shall not be used. The diapositive film will have been stored and transported in a clean, smooth, and flat condition from the moment of manufacture.

Processing, including exposure, development, fixation, washing, and drying of all photographic materials, shall result in finished diapositives having a fine grain quality, a normal, uniform density, and such tone and contrast that all photographic details shall show clearly within the dark and light tone areas as well as in areas with intermediate tones. Adequate grades of diapositive film and proper laboratory procedures shall be used to achieve the best diapositive possible. Excessive variance in tone or contrast between adjoining diapositives shall be cause for rejection.

All diapositives shall be clear and free from chemical stains, blemishes, uneven spots, air bells, light streaks or fog, and other defects that would, in the opinion of the owner, interfere with their intended purpose. Diapositives shall be delivered to the owner in a clean, smooth, flat, and usable condition.

### 3.1.33 Titling

All lettering shall be positioned as closely as possible to the inside leading edge of the format of the exposure. The characters used for making the exposures shall be 3/16 inch, drafted or stamped with opaque ink to avoid deformation of the film as what is manifested with heat embossed titlers. The lettering shall clearly show on all copies of the photographs and in the positions specified by Medina County.

### 3.1.34 Documentation

Each exposure shall be marked beginning in the left-forward corner of the format with the numerical abbreviation of the date in the American usage (MM-DD-YY).

The time of day in hours and minutes shall be shown on the first and last exposures of each flight line midway between the date and the middle forward fiducial. The roll-strip-exposure number shall be marked at the right-forward corner of the format. All film on a single spool shall bear the same unique roll number. The photographic strips shall be flown and numbered as specified in the Detail Sheet in an unbroken series. The nadir (x,y,z) of each exposure shall be entered into a database.

### ***Film Scanning***

Fully digital scanning procedures and equipment shall be used. Scanning devices used shall be precision photogrammetric scanners capable of scanning resolutions equal to or finer than raster resolutions specified for final raster resolution. The Bidder shall include the specific scanning devices and scanning resolutions proposed. The scanning resolutions shall be equal to or finer than the specified raster resolutions. No interpolation or resampling of pixels to a finer resolution than the original scan will be allowed.

### ***Fully Analytical Aerial Triangulation***

The Contractor must use Fully Analytic Aerial Triangulation (FAAT) techniques to extend and densify ground control for the specified photography.

### 3.1.35 Mensuration

Mensuration must be done on an analytical stereo plotter capable of 1 micron of intrinsic accuracy, in good calibration.

### 3.1.36 Software

The fully analytic aerial triangulation solution should be calculated using industry-standard software packages, such as Rapid Analytic block Aerial Triangulation Systems (RABATS), the Bundle Refinement Aerial Triangulation Solution (BRATS), or PAT-B software packages. The specific Aerial Triangulation package will be presented in the proposal. The solution must be achieved from a full adjustment.

### 3.1.37 Control

All horizontal ground control positions computed by analytic triangulation must be in the State Plane Coordinate (SPC) System, North American Datum (NAD) 1983, North Zone, Survey Feet as specified.

### 3.1.38 Pass Points and Tie Points

Individual frames must carry a minimum of nine pass points, with the exception of end frames of flight lines, which must carry a minimum of six pass points. One point must lie near the corner of each neat model, and one point must line near the nadir position of each neat model. Medina County recognizes that deviation from the ideal distribution may be necessary for photographs covering bodies of water and areas of heavy ground cover.

### 3.1.39 FAAT Report

The Contractor shall submit a detailed description of the Fully Analytic Aerial Triangulation (FAAT) procedure in the proposal. Upon completion of all aerial triangulation work, the Contractor must provide Medina County with a formal Aerial Triangulation Report.

### ***Digital Orthophotography Conversion***

#### 3.1.40 Digital Orthophoto Resolutions/Scale

The County is requiring that the color digital orthophotos be produced in 6" raster resolution for the entire project area.

The orthophoto map scale is 1"= 100' with a resolution of 6" per raster. The image tile size will be 1000' x 1750' and conform to the County's existing ortho tile grid system. The image files will be named in a naming convention to be determined.

#### 3.1.41 Orthorectification Surface

In Spring of 2002, the County was flown solely for the purpose of generating 2' contours to meet ASPRS Class I specifications. The County was flown at 1" = 660' NCS. Panchromatic (black and white) film was used but no imagery was produced. A determination was made to re-fly the County for the Land Use/Cover Update (specified later in this document) to meet the requirement in providing a 2004 benchmark of County Land Cover. It was also decided to acquire color imagery. However, the existing DEM used in the 2002 contour project will provide the basis for the surface to be used in rectifying the imagery.

#### 3.1.42 Orthophoto Creation

Creation of Digital Orthophotos shall utilize several types of inputs. These inputs shall include:

- ◆ The unrectified raster image file acquired from the scanning of the aerial photography
- ◆ A Digital Elevation Model (DEM)
- ◆ The photo-identifiable image and ground coordinates of ground control positions acquired from aerial triangulation
- ◆ Camera calibration information

These four input sources shall be used to register the raw image file mathematically to the data to determine the location of the rasters with respect to the ground and to remove relief displacement from the image file.

#### 3.1.43 Image Radiometry

The color digital images shall be delivered in an industry standard format, 256 levels of RGB (24-bit). The final mosaic of the entire county will be uniform in contrast and shade to eliminate any noticeable variations from the aerial photography or during digital orthophotography creation.

#### 3.1.44 Image Quality

Orthophotos shall not contain defects such as out-of-focus imagery, dust marks, scratches, or inconsistencies in tone and density between individual Orthophotos and/or adjacent tiles.

### ***Quality Control***

The Contractor must provide the County with a description of the quality control methods and procedures used in all aspects of the project, including the acquisition and development of aerial photography and the processing of the digital orthophotos. Describe what field verification measures are carried out to ensure that the products meet Accuracy Standards. Verification should also be performed for image completeness to ensure that no gaps exist in the digital Orthophoto coverage.

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

#### 3.1.45 Documentation

Clear, well-organized, and understandable documentation shall accompany the digital orthophoto files both for the reference purposes and to be used in orienting new GIS users to their characteristics.

#### 3.1.46 Quality Control Methodology

The Contractor shall include a proven methodology to QC/scrub the images to provide the County a way to facilitate rapid acceptance of the images.

#### 3.1.47 Digital File Format and Media Type

Medina County will use the digital orthophotos with ESRI software. The georeferenced raster files shall be delivered in the TIFF (.tif) file format with the related TIFF World File (.tfw) to define the images spatial location. It is preferred that the files are on CD-ROM for tile delivery. The final image database will also be on CD-ROM and delivered by resolution level.

Medina County will not reimburse for any cost incurred to supply the raster files in any file format other than the above specified format at any stage of the contract.

### ***Deliverables***

- ◆ flight line maps digital soft copy form (ArcInfo export .e00 file)
- ◆ film inspection quality inspection report within 2 weeks of date of photography
- ◆ one set of contact prints 9" x 9", four weeks after the photography for quality control purposes
- ◆ photo index map (hardcopy plot)
- ◆ full set of diapositives (if used)
- ◆ ground control survey report (if needed)
- ◆ Fully Analytic Aerial Triangulation (FAAT) report
- ◆ color digital orthophoto files in 6" raster resolution in TIFF (.tif) format with related TIFF world file (.tfw) delivered on ISO 9660 compliant CD-ROMs with total file count
- ◆ viewing application utility of the digital ortho images that could facilitate improved image retrieval and/or facilitate client QC image scrub over ARC/INFO image catalogs

### **3.2 Updated Land Use/Cover**

The Contractor shall submit a detailed description of their process in delineating Land Use/Cover data from the 2004 color digital orthophoto imagery. The final deliverable will be an ArcInfo 7.x polygon coverage and shall be attributed based on the following categories:

- 10. Agriculture
  - 101. Cropland
  - 102. Confined Feeding Operations
- 11. Open/Bare Ground
  - 111. Urban
  - 112. Grass
  - 113. Pasture
  - 114. Meadows
- 12. Open Space



- 121. Golf Course
- 122. Cemetery
- 123. Parks
- 13. Water (Lakes, Ponds, Rivers, Major Streams, Open Drainage Ditches)
- 14. Residential
  - 141. High Density
  - 142. Low Density
- 15. Commercial
- 16. Industrial
- 17. Wooded/Forested
  - 171. Deciduous
  - 172. Evergreen
- 18. Brush/Scrub
- 19. Transportation
  - 191. Road
  - 192. Rail
  - 193. Airports

### 3.2.1 Reference Files

Existing data files that can be used as reference for development of this coverage are the ODNR Land Cover coverage (based on 1990 imagery) and a Land and Vegetation Cover. The Land and Vegetation Cover was completed in mid 2001 and was based on 30 meter satellite imagery. Specifications for this coverage can be viewed at:

[http://www.planning.co.medina.oh.us/nat\\_res\\_inv\\_chip/nat\\_res\\_inv/natural\\_res\\_study.htm#landcover](http://www.planning.co.medina.oh.us/nat_res_inv_chip/nat_res_inv/natural_res_study.htm#landcover)

Another file available for reference is the County Auditors' parcel database. Each parcel has a designated Land Use code as defined and required by Ohio Revised Code. It should be noted that this file is a parcel based coding system that has a very different application from the application being sought for this project and shall be used as reference only.

### ***Deliverables***

- ◆ ArcInfo 7.x polygon coverage delineating Land Use/Cover (ArcInfo export .e00 file)

## **3.3 Wetlands (Forested/Non-Forested)**

The Contractor shall submit a detailed description of their process in delineating Wetlands from the 2004 color digital orthophoto imagery. The final deliverable will be an ArcInfo 7.x polygon coverage. An additional attribute shall be added to the coverage to distinguish Forested from Non-Forested Wetland areas.

### 3.3.1 Reference Files

Existing data files that can be used as reference for development of this coverage are the ODNR Land Cover coverage (based on 1990 imagery) and a Land and Vegetation Cover. The Land and Vegetation Cover was completed in mid 2001 and was based on 30 meter satellite imagery. Specifications for this coverage can be viewed at:

[http://www.planning.co.medina.oh.us/nat\\_res\\_inv\\_chip/nat\\_res\\_inv/natural\\_res\\_study.htm#landcover](http://www.planning.co.medina.oh.us/nat_res_inv_chip/nat_res_inv/natural_res_study.htm#landcover)

### ***Deliverables***

- ◆ ArcInfo 7.x polygon coverage delineating Forested and Non-Forested Wetlands (ArcInfo

export .e00 file)

### **3.4 Impervious Surfaces**

The Contractor shall submit a detailed description of their process in delineating Impervious Surfaces from the 2004 color digital orthophoto imagery. The final deliverable will be an ArcInfo 7.x polygon coverage.

#### **3.4.1 Definition**

Impervious Surface is defined as any materials that substantially reduces or prevents the infiltration of storm water into previously undeveloped land. A surface that has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water.

Impervious surface shall include paved surfaces, graveled driveways, and parking areas.

Sidewalks will not be considered an Impervious Surface for the purposes of this project.

Buildings and/or structures shall be inclusive of driveways and parking lots and delineation of building/structure outlines are not necessary for this project.

#### ***Deliverables***

- ◆ ArcInfo 7.x polygon coverage delineating Impervious Surfaces (ArcInfo export .e00 file)

## Summary of Deliverables

- ◆ flight line maps digital soft copy form (ArcInfo export .e00 file)
- ◆ film inspection quality inspection report within 2 weeks of date of photography
- ◆ one set of contact prints 9" x 9", four weeks after the photography for quality control purposes
- ◆ photo index map (hardcopy plot)
- ◆ full set of diapositives (if used)
- ◆ ground control survey report (if needed)
- ◆ Fully Analytic Aerial Triangulation (FAAT) report
- ◆ color digital orthophoto files in 6" raster resolution in TIFF (.tif) format with related TIFF world file (.tfw) delivered on ISO 9660 compliant CD-ROMs with total file count
- ◆ viewing application utility of the digital ortho images that could facilitate improved image retrieval and/or facilitate client QC image scrub over ARC/INFO image catalogs
- ◆ ArcInfo 7.x polygon coverage delineating Land Use/Cover (ArcInfo export .e00 file)
- ◆ ArcInfo 7.x polygon coverage delineating Forested and Non-Forested Wetlands (ArcInfo export .e00 file)
- ◆ ArcInfo 7.x polygon coverage delineating Impervious Surfaces (ArcInfo export .e00 file)

## 4.0 Instruction to Bidders

### 4.1 General

Sealed Proposals – 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 November 14th, 2003, 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 proposals. The bids shall be deposited at the address given above, prior to the time of the opening. Should a proposal 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 to the bidder.

Proposals shall be submitted only on forms furnished by the Medina County Engineer. Proposals shall be sealed in an envelope plainly marked on the outside, "Medina County Digital Ortho and Land Use/Cover GIS Project 2004."

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.

All bids will include a non-collusion affidavit and a personal property tax verification affidavit on forms provided.

### 4.2 Bid Guarantee

Each proposal 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 proposals. 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 case of failure to enter into a contract.

In the case of acceptance of a proposal 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, or 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 liquidated damages.

### 4.3 Schedule

RFP Release	October 24, 2003	
Question and Answer Deadline	November 7, 2003	
Response to Questions	November 11, 2003	(No later than)
Proposal Due	November 14, 2003	
Evaluation	November 21, 2003	
Short List Selection	November 24, 2003	(if needed)

Negotiation and Finalization	December 18, 2003	(no later than)
Contract Award	TBD	
Project Completion	TBD	

4.4 Questions and Contact Information

Every attempt will be made by the County to answer all questions in regards to this RFP in as timely a manner as possible. All questions arising from review of this RFP should be directed to:

Lowell Filak  
 Medina County Highway Engineer’s Office  
 791 W. Smith Rd.  
 Medina, OH 44256  
 330-723-9571  
 330-723-9661 (fax)  
[lfilak@medinaco.org](mailto:lfilak@medinaco.org)

Contact with any other party within Medina County in regards to this RFP could be cause for disqualification and/or result in delays of answers.

4.5 Submittal

Each firm submitting a proposal shall provide the County with One (1) original hardcopy document and One (1) digital version of the proposal in an adobe acrobat (.pdf) format. Each proposal shall be clearly marked on the outside of the envelope with the words “Medina County Digital Ortho and Land Use/Cover GIS Project”. Proposals shall be submitted in accordance to format and content described in this section. Any proposals not in compliance with these specifications may be disqualified.

4.6 Proposal Format

Each proposal submitted shall be formatted in the following manner:

**Cover Letter** – Each proposal shall contain a cover letter signed by an authorized agent of the firm submitting the proposal. The cover letter will clearly define a primary contact name, address, phone, and email in regards to the proposal.

**Company Overview** – This section will outline information as it pertains to the proposing firm’s (and any subcontractors) business locations, number of years in business, and general statements of qualifications.

**Technical Approach** – This section refers to the approach to be taken. It will clearly outline processes and milestones in achieving a successful project. Quality control and overall management practices (internal, client-based, and subcontractors) are to be described in this section. If subcontractors are used, this section should detail which portions of the project will be accomplished by which firm.

**Staff** – This section will provide an organizational flow chart, resumes of key staff individuals, and resumes of any subcontractors. The overall project manager should be clearly indicated. Each resume should clearly indicate company affiliation, number of years of experience on related projects, and highlight project experience on similar projects.

**References** – The primary Contractor shall have at least three (3) references that can attest to the knowledge and experience of the firm with similar projects. Any subcontractors used for the project should include at least two (2) references that can attest to their knowledge and experience with their portion of the project.

**Schedule and Capacity** – The proposing firm shall provide a preliminary schedule of activity that corresponds to the milestones described in the Technical Approach section. This section should also include an impact statement that any currently-held projects or any future projects will not have any adverse effect in terms of schedule delays.

**Cost Form** – The cost form shall be filled out and unaltered in format. Space has been provided to include any alternate bids.

#### 4.7 Evaluation

Each proposal will be fully evaluated by Medina County staff and a weighted rating system will be applied based on the following criteria:

- ◆ Firm Qualifications
- ◆ Staff Qualifications
- ◆ Capacity to Perform Work
- ◆ Project Management Approach
- ◆ Technical Approach
- ◆ References
- ◆ Cost
- ◆ Subcontractor Qualifications (if any used)

#### 4.8 Alternates

While every attempt has been made to construct the specifications of this RFP in compliance with current technology, it is recognized that advancements in technology occur on a regular basis. Alternative approaches and products outside the scope and specifications of this RFP will be considered. The proposing firm should clearly indicate and describe in detail any differences in scope and specifications in the body of the proposal. Space is provided on the Cost Form to summarize and outline any alternate methodology, changes in scope, changes in specifications, and costs. Any alternate approaches or products should contain sufficient evidence to the validity of the process or products. Whenever possible, samples must be provided. Any samples received will be used as a benchmark for quality and accuracy if the alternate approach is accepted.

**Appendix A**  
**(Required Forms)**

# Cost Form

Color Digital Orthophotos: \$ \_\_\_\_\_

Land Use/Cover: \$ \_\_\_\_\_

Wetlands: \$ \_\_\_\_\_

Impervious Surfaces: \$ \_\_\_\_\_

**TOTAL \$** \_\_\_\_\_

Use the space below (and any additional pages) to summarize any alternate methodology and bids.



**INDEPENDENT CONTRACTOR INDEMNIFICATION CLAUSE**

The Contractor and the Owner mutually agree that the relationship formed by this agreement is intended to be that of customer and independent contractor, and is not an employment relationship.

The Contractor hereby represents that it is not an entity over whom the National Labor Relations Board has ever declined jurisdiction.

The Contractor further agrees and covenants that should a safety issue or complaint arise from, or involving, an employee, agent or representative of the Contractor, the Contractor will indemnify and hold the Owner harmless, and will assume all legal and financial responsibility for said issue or complaint including, but not limited to, all fines, fees, costs, corrective action, provision of equipment, training, and administration.

The Contractor further agrees and covenants that, should a safety-related issue, suit, or complaint be filed against the Owner by an employee, agent or representative of the Contractor, the Contractor will pay all associated costs of the Owner, as the Owner deems necessary, in order to defend, correct, or resolve said issue of complaint.

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

Contractor: \_\_\_\_\_

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

**MEDINA COUNTY, OHIO**  
**Medina County Digital Ortho and Land Use/Cover GIS Project**

**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 \_\_\_\_\_, 2003.

(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 \_\_\_\_\_, 2003, 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 and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 2003.

(seal)

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

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

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