1. Type of aerial camera equipped with forward motion compensation (AWAR no less than 100 is required);
2. Aircraft specifications;
3. Forward overlap & side lap;
4. Planned aerial equipment & materials (e.g., film, camera)
5. Scanning procedures (including equipment, process, resolution, etc);
6. Quality control procedures;
7. Products to be delivered;
8. Identify ground control and GPS methods needed to support the photography, documentation of recovered and new control points; and,
9. Correlation to existing photography.

High-accuracy position and attitude sensors shall be operated simultaneously with the camera. 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. 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.

All aircraft shall be maintained and operated in accordance with regulations 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, oxygen and other required equipment) not less than 5% above the highest altitude necessary to achieve the smallest aerial image scale required. If the project is in controlled air space, the appropriate Air Route Traffic Control Center (ARTCC) must be contacted. If any military bases or secured government installations are within the project area, the respondent must contact the agency(s) and comply with security regulations of this or any other sensitive area. Inspection of the original images to check for tilt, overlap, crab, cloud cover, snow cover, and proper sun angle must be carried out before the images are compiled for the creation of digital orthoimages.

Immediately after aerial mission, the respondent shall review the images to determine if the camera functioned properly during the mission. If the review indicates a malfunction, the aerial mission must be reflown at no additional cost to the County. Re-flights shall be performed immediately (weather permitting) ordered for the purpose of securing replacement images for all which fail to meet minimum standards set forth in this proposal, provided ground conditions have not yet terminated the photographic "season." Inspections of aerial imagery should be performed immediately after the aerial imagery mission. Unacceptable aerial imagery (as

determined by the County) shall be reflown by the respondent at no additional cost to the County, with the reflight coverage overlapping the acceptable digital images.

G. Ground Control

The Respondent 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 imagery and the processing of the digital orthoimages. Describe what field verification measures are carried out to ensure that the products meet the National Map Accuracy Standard (NMAS). Verification should also be performed for image completeness to ensure that no gaps exist in the digital orthoimage coverage. All coordination of ground control targeting will be the responsibility of the Respondent. The Respondent shall provide a brief description of the equipment and methods to be used for airborne GPS or new grounds surveys, and attach this report to a copy of the contract map prepared to show the locations of all control points intended for use in the mapping project. An ArcView point theme of all horizontal ground control targeted and non-targeted used, shall be submitted.

To minimize requirements for ground control and to minimize project time, the Respondent is required to use airborne GPS technology to collect the x, y and z position of the aircraft . Ground control targeting costs shall be listed in the proposal.

The conventional and alternative approaches must support all photogrammetry and digital orthographic projection purposes set forth in this specification and shall yield final products meeting or exceeding ASPRS accuracy for large-scale Maps - Class 1.

Any fieldwork must be supervised by a Tennessee Registered Land Surveyor or Tennessee licensed Engineer.

Digital Orthographic Projection

Respondents should present a strategy for creating and delivering color and grayscale, digital orthophoto images.

1. Process for creating and delivering color and grayscale digital orthophoto images;
2. Equipment used to scan images (include scanning resolution in microns and DPI);
3. Description of equipment, software and process used to orthorectify images;
4. Edge matching technique;
5. Estimate of individual photo tile and file size and the number of standard DVD- ROMs necessary.

The digital orthographic projection must be produced using accepted photogrammetric industry practices.

The digital orthographic projection product shall meet National Map Accuracy Standards (NMAS) for the appropriate map scale. NMAS standards for 100 scale mapping is classified by the following: 90% of all points are within 3.33' of actual location and/or all observed ground control points have less than a 1.55' root mean square error (RMSE) for both x and y distance axis.

The chosen firm may use the existing DTM created for the Register's office in 2006 or a DTM created by the Respondent as part of the project, for rectification of the new orthographic project. It is the respondent's responsibility to determine the best process to produce the orthoimagery from the existing DTM. The respondent shall be responsible for any control survey necessary to produce an accurate and acceptable product.

Prior to undertaking full digital orthophoto production, the Respondent shall furnish the county with sample digital images at all scales to evaluate and accept as examples of overall image quality. The county will select one image that will become the standard to which all subsequent digital orthophotos will be compared for acceptance/rejection relative to image quality.

Creation of digital orthoimagery may require utilization of several types of inputs. These inputs will be taken from existing data and shall be used to ensure the maximum accuracy possible for the project, and include (as needed):

- The unrectified raster image file acquired from the aerial images;
- The existing DTM or a DTM created by the Respondent as part of the project as the source of sufficient accuracy to meet the County's accuracy requirements;
- Previous digital orthophotos owned by the county;
- The photo-identifiable image and ground coordinates of ground control positions;
- Camera calibration information and airborne GPS and IMU data..

The respondent will propose which of the above sources will be used and how they will be used to accomplish the project.

The orthophotos shall not contain material defects or inconsistencies in tone and density between individual and/or adjacent image tiles that materially reduce the utility of the orthophotos. All digital images to be edge matched without pixel gaps between geographic partitions, and no images shall have void areas inside tiles.

A final mosaic of the entire county will be uniform in contrast and shade to eliminate any noticeable variations from the aerial imagery or during digital orthoimagery creation. Each image shall be radiometrically adjusted to compensate for non-uniformities present in the sensing elements of the camera. Each image shall be further adjusted to compensate for tonal differences due to varying lighting conditions and surface response. Respondents are expected to identify the quality assurance and checking procedures that shall be employed to guarantee proper tone balancing and overall image quality. Each image shall be orthorectified utilizing an elevation model to generate an orthoimage. The orthoimages shall be combined into a virtually

seamless orthomosaic. The orthomosaic shall be partitioned into individual image tiles corresponding to a specified image tile scheme. This tiling scheme will be developed with the vendor's assistance.

Clear, well-organized, and understandable documentation shall accompany the digital orthoimage files both for the reference purposes and to be used in orienting new GIS users to their characteristics. This will include FGDC-compliant metadata files.

A. Horizontal & Vertical accuracy:

Horizontal and vertical accuracies for the new orthophotos will meet or exceed National Map Accuracy Standards.

B. Suggested File Format, Size & Tiling Scheme:

Digital images should be delivered in a standard uncompressed .tif file format with accompanying world file; files that are appropriate MrSID and ECW for use with Arc/Info and ArcView. The preferred file naming convention is a system similar to the one now in place for the existing digital photos—79000A, where 79 = Shelby County; 000 = equivalent to Shelby County Assessor Tax Map Identifiers; A= equivalent to Shelby County Assessor Tax Map Identifiers .

The suggested file size/tiling is using the system now in place with the County digital photos.

Also, the County requires that the final delivery will include a near seamless MrSID format and ECW image file developed from the highest resolution level of panchromatic images covering the entire County.

C. Deliverables

The following is a list of suggested deliverables, but is not inclusive. The respondent is expected to augment the list.

1. No paper copies of deliverables are required;
2. Two (2) complete sets of digital orthophotos & other data on CDs or DVDs, the MrSID compressed file for the entire County. Digital orthophoto images shall be geo-referenced to the Tennessee State Plane Coordinate System (West Zone) feet based on the NAD83 horizontal and NAVD88 vertical datums);
3. Formal completion date of aerial photography mission;
4. Final flight line map with photo centers (as a point) in digital format;
5. U.S.G.S. camera calibration report for camera used;
6. Reports regarding aircraft and camera operation assurances;
7. Ground Control Information in digital format (ArcView Shape File) the recovered/established control points;
8. Scanned negatives converted to a positive in a tiff format (rather than 9x9 contact prints); and,
9. FGDC-compliant metadata files.

X. CONTRACT REQUIREMENTS

The successful Proposer will be expected to enter into a contract incorporating the following terms and conditions, and such additional terms and conditions standard to services of this type.

a. General Requirements

1. Control. All services by the Provider will be performed in a manner satisfactory to the County, and in accordance with the generally accepted business practices and procedures of the County.

2. Provider's Personnel. The Provider certifies that it presently has adequate qualified personnel to perform all services required under this Contract. All work under this Contract will be supervised by the provider. The Provider further certifies that all of its employees assigned to serve the County have such knowledge and experience as required to perform the duties assigned to them. Any employee of the Consultant who, in the opinion of the County, is incompetent, or whose conduct becomes detrimental to the work, shall immediately be removed from association with services under this Contract.

3. Independent Status. (a) Nothing in this Contract shall be deemed to represent that the provider, or any of the provider's employees or agents, are the agents, representatives, or employees of the County. The Provider will be an independent consultant over the details and means for performing its obligations under this Contract. Anything in this Contract which may appear to give County the right to direct the Provider as to the details of the performance of its obligations under this Contract or to exercise a measure of control over the Provider is solely for purposes of compliance with local, state and federal regulations and means that the Consultant will follow the desires of the County only as to the intended results of the scope of this Contract.

(b) It is further expressly agreed and understood by Provider that neither it nor its employees or agents are entitled to any benefits which normally accrue to employees of the County; that the provider has been retained by the County to perform the services specified herein (not hired) and that the remuneration specified herein is considered fees for services performed (not wages) and that invoices submitted to the County by the Provider for services performed shall be on the Consultant's letterhead.

4. Termination Or Abandonment. (a) It shall be cause for the immediate termination of this Contract if, after its execution, the County determines that either:

(i) the Provider or any of its principals, partners or corporate officers, if a corporation, including the corporation itself, has plead nolo contendere, or has plead or been found guilty of a criminal violation, whether state or federal, involving, but not limited to, governmental sales or purchases, including but not limited to the rigging of bids, price fixing, or any other collusive and illegal activity pertaining to bidding and governmental contracting.

(ii) The Provider has subcontracted, assigned, delegated, or transferred its rights, obligations or interests under this Contract without the County's consent or approval.

(iii) The Provider has filed bankruptcy, become insolvent or made an assignment for the benefit of creditors, or a receiver, or similar officer is appointed to take charge of all or part of Provider's assets.

(b) The County may terminate the Contract upon five (5) days written notice by the County or its authorized agent to the Provider for Provider's failure to provide the services specified under this Contract.

(c) This Contract may be terminated by either party by giving thirty (30) days written notice to the other, before the effective date of termination. In the event of such termination, the Provider shall be entitled to receive just and equitable compensation for any satisfactory work performed as of the termination date; however, the Provider shall not be reimbursed for any anticipatory profits that have not been earned as of the date of termination.

(d) All work accomplished by Provider prior to the date of such termination shall be recorded and tangible work documents shall be transferred to and become the sole property of the County prior to payment for services rendered.

(e) Notwithstanding the above, the Provider shall not be relieved of liability to the County for damages sustained by the County by virtue of any breach of the Contract by the Provider and the County may withhold any payments to Consultant for the purpose of setoff until such time as the exact amount of damages due the County from the Provider is determined.

5. Subcontracting, Assignment Or Transfer. Any subcontracting, assignment, delegation or transfer of all or part of the rights, responsibilities, or interest of either party to this Contract is prohibited unless by written consent of the other party. No subcontracting, assignment, delegation or transfer shall relieve the Provider from performance of its duties under this contract. The County shall not be responsible for the fulfillment of the Provider's obligations to its transferors or sub-providers. Upon the request of the other party, the subcontracting, assigning, delegating or transferring party shall provide all documents evidencing the assignment.

6. Conflict Of Interest. The Provider covenants that it has no public or private interest, and will not acquire directly or indirectly any interest which would conflict in any manner with the performance of its services. The Provider warrants that no part of the total contract amount provided

herein shall be paid directly or indirectly to any officer or employee of the County as wages, compensation, or gifts in exchange for acting as officer, agent, employee, sub-provider to the Provider in connection with any work contemplated or performed relative to this Contract.

7. Covenant Against Contingent Fees. The Provider warrants that it has not employed or retained any company or person other than a bona fide employee working solely for the Provider, to solicit or secure this Contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the Provider any fee, commission, percentage, brokerage fee, gift, or any other consideration contingent upon or resulting from the award or making of this Contract. For breach or violation of this warranty, the County will have the right to recover the full amount of such fee, commission, percentage, brokerage fee, gift, or other consideration.

8. Employment Of County Workers. The Provider will not engage, on a full or part-time, or other basis during the period of the Contract, any professional or technical personnel who are or have been at any time during the period of the Contract in the employ of the County.

9. Arbitration. Any dispute concerning a question of fact in connection with the work not disposed of by agreement between the Consultant and the County will be referred to the Shelby County Contract Administrator or his/her duly authorized representative, whose decision regarding same will be final.

10. General Compliance With Laws. (a) If required, the Provider shall certify that it is qualified and duly licensed to do business in the State of Tennessee and that it will take such action as, from time to time, may be necessary to remain so qualified and it shall obtain, at its expense, all licenses, permits, insurance, and governmental approvals, if any, necessary to the performance of its obligations under this Contract.

(b) The Provider is assumed to be familiar with and agrees that at all times it will observe and comply with all federal, state, and local laws, ordinances, and regulations in any manner affecting the conduct of the work. The preceding shall include, but is not limited to, compliance with all Equal Employment Opportunity laws, the Fair Labor Standards Act, Occupational Safety and Health Administration (OSHA) requirements, the Americans with Disabilities Act (ADA), and all state and local laws, rules and regulations pertaining to electrical requirements of residential construction and renovation.

(c) This Contract will be interpreted in accordance with the laws of the State of Tennessee. By execution of this contract the Provider agrees that all actions, whether sounding in contract or in tort, relating to the validity, construction, interpretation and enforcement of this contract will be instituted and litigated in the courts of the State of Tennessee, located in Shelby County, Tennessee, and in no other. In accordance herewith, the parties to this contract submit to the jurisdiction of the courts of the State of Tennessee located in Shelby County, Tennessee.

11. Nondiscrimination. The Provider hereby agrees, warrants, and assures that no person shall be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination in

the performance of this Contract or in the employment practices of the Provider on the grounds of handicap and/or disability, age, race, color, religion, sex, national origin, or any other classification protected by Federal, Tennessee State constitutional, or statutory law. The Provider shall upon request show proof of such nondiscrimination, and shall post in conspicuous places available to all employees and applicants notices of nondiscrimination.

12. Entire Agreement. This Contract contains the entire Contract of the parties and there are no other promises or conditions in any other Contract whether oral or written. This Contract supersedes any prior written or oral Contracts between the parties.

13. Amendment. This Contract may be modified or amended, only if the amendment is made in writing and is signed by both parties.

14. Severability. If any provision of this Contract is held to be unlawful, invalid or unenforceable under any present or future laws, such provision shall be fully severable; and this Contract shall then be construed and enforced as if such unlawful, invalid or unenforceable provision had not been a part hereof. The remaining provisions of this Contract shall remain in full force and effect and shall not be affected by such unlawful, invalid or unenforceable provision or by its severance here from. Furthermore, in lieu of such unlawful, invalid, or unenforceable provision, there shall be added automatically as a part of this Contract a provision as similar in terms to such unlawful, invalid or unenforceable provision as may be possible, and be legal, valid and enforceable.

15. No Waiver Of Contractual Right. No waiver of any term, condition, default, or breach of this Contract, or of any document executed pursuant hereto, shall be effective unless in writing and executed by the party making such waiver; and no such waiver shall operate as a waiver of either (a) such term, condition, default, or breach on any other occasion or (b) any other term, condition, default, or breach of this Contract or of such document. No delay or failure to enforce any provision in this Contract or in any document executed pursuant hereto shall operate as a waiver of such provision or any other provision herein or in any document related hereto. The enforcement by any party of any right or remedy it may have under this Contract or applicable law shall not be deemed an election of remedies or otherwise prevent such party from enforcement of one or more other remedies at any time.

16. Matters To Be Disregarded. The titles of the several sections, subsections, and paragraphs set forth in this contract are inserted for convenience of reference only and shall be disregarded in construing or interpreting any of the provisions of this contract.

17. Subject To Funding. This Contract is subject to annual appropriations of funds by the Shelby County Government. In the event sufficient funds for this Contract are not appropriated by Shelby County Government for any of its fiscal period during the term hereof, then this Contract will be terminated. In the event of such termination, the consultant shall be entitled to receive just and equitable compensation for any satisfactory work performed as of the termination date.

18. Travel Expenses. All travel expenses payable under this Contract shall be in accordance with the County Travel Policy and Procedures. This includes advance written travel authorization,

submission of travel claims, documentation requirements, and reimbursement rates. No travel advances will be made by the County.

19. Incorporation Of Other Documents. (a) Provider shall provide services pursuant to this Contract in accordance with the terms and conditions set forth within the Shelby County Request for the Shelby County Purchasing Department and incorporated herein by reference.

(b) It is understood and agreed between the parties that in the event of a variance between the terms and conditions of this Contract and any amendment thereto and the terms and conditions contained either within the Request for Proposals/Bids or the Response thereto, the terms and conditions of this Contract as well as any amendment shall take precedence and control the relationship and understanding of the parties.

20. Contracting With Locally Owned Small Businesses. The Provider shall take affirmative action to utilized Locally Owned Small Businesses when possible as sources of supplies, equipment, construction and services.

21. Incorporation Of Whereas Clauses. The foregoing whereas clauses are hereby incorporated into this Contract and made a part hereof.

22. Waiver Of Proprietary Interest. Notwithstanding anything to the contrary contained herein or within any other document supplied to County by the Provider, Provider understands and acknowledges that County is a governmental entity subject to the laws of the State of Tennessee and that any reports, data or other information supplied to County by Consultant due to services performed pursuant to this Contract is subject to being disclosed as a public record in accordance with the laws of the State of Tennessee.

23. Organization Status And Authority. (a) Provider represents and warrants that it is a corporation, limited liability company, partnership, or other entity duly organized, validly existing and in good standing under the laws of the state of Tennessee; it has the power and authority to own its properties and assets and is duly qualified to carry on its business in every jurisdiction wherein such qualification is necessary.

(b) The execution, delivery and performance of this Contract by the Provider has been duly authorized by all requisite action and will not violate any provision of law, any order of any court or other agency of government, the organizational documents of the Provider, any provision of any indenture, agreement or other instrument to which the Provider is a party, or by which the Provider's respective properties or assets are bound, or be in conflict with, result in a breach of, or constitute (with due notice or lapse of time or both) a default under any such indenture, agreement or other instrument, or result in the creation or imposition of any lien, charge or encumbrance of any nature whatsoever upon any of the properties or assets.

24. Warranty. Provider warrants to County that all Services shall be in strict compliance with the terms of this Contract, and all applicable governmental laws, rules and regulations.

25. Rights in Data. The County shall become the owner, and the Provider shall be required to grant to the County, or its successors, a perpetual, non-exclusive, non-transferable, royalty-free right, in the County's name, to use any deliverables provided by the Provider under this Contract, regardless of whether they are proprietary to the Provider or to any third parties.

26. Ownership of Materials. All materials prepared or completed during the performance of services specified in this RFP, including, but not limited to, maps, documents, aerial negatives, or digital data, shall become the property of Shelby County and shall not be copyrighted by the Contactor. Also, the same material shall not be released or made available to any third party or used for other purposes at any time without the written approval of the Shelby County Register

27. Federal Tax Identification Number. The following information should also be included with your proposal: Your form of business entity (i.e., corporation, partnership, limited partnership, joint venture, sole proprietorship, etc.), and your Taxpayer Identification Number. If submitted as a joint venture, a separate number for each member of the venture is required if one number has not been obtained for the venture. A Taxpayer Identification Number is required for entities other than a sole proprietorship.

28. Work performance in the USA. All work performed for this project shall be done within the United States of America, i.e., the conterminous 48 states, Alaska, and Hawaii. It will not be acceptable for any portion of the project to be done in a foreign country.

29. Fee Payments. The contract awarded pursuant to this RFP document will be based upon a fixed fee basis, with payments negotiated upon acceptance of the vendor's cost proposal. No payments shall be made prior to production, delivery, inspection and approval by the Shelby County Register or its representative, of all sample data files. Thereafter payments, as approved by the Shelby County Register shall be made monthly to the Contractor based on the proportion of work completed, less ten percent (10%) retainage. This retainage shall be released to the Contractor within sixty (60) days after the Shelby County Register has accepted and approved the contract as completed. In the event the work specified herein is not successfully completed within the time provided, unless otherwise allowed, the Contractor shall be charged the sum of $200.00 per day as liquidated damages, not as penalty, for each additional day required for the completion of the work, legal banking days considered.

A. INDEMNIFICATION AND INSURANCE REQUIREMENTS

1. Responsibilities For Claims And Liabilities. (a) Provider shall indemnify, defend, save and hold harmless the County, and its elected officials, officers, employees, agents, assigns, and instrumentalities from and against any and all claims, liability, losses or damages—including but not limited to Title VII and 42 USC 1983 prohibited acts—arising out of or resulting from any conduct; whether actions or omissions; whether intentional, unintentional, or negligent; whether legal or illegal;