REQUEST FOR PROPOSALS FOR PROFESSIONAL SERVICES

The City of Sioux Falls, South Dakota, is accepting proposals from qualified firms for services for the following Public Works project.

DIGITAL ORTHOPHOTOGRAPHY PROJECT

The purpose of this Request for Proposals (RFP) is to solicit responses from qualified professionals for the production and supply of orthorectified aerial imagery, LIDAR survey, and associated mapping products. The City of Sioux Falls, South Dakota, on behalf of a multi-jurisdictional consortium, is coordinating a joint purchase of digital orthophotography and mapping services. The government agencies involved in this project include the City of Sioux Falls, Minnehaha County, Lincoln County, and Southeastern Council of Governments (SECOG). The aerial mapping products will be used by the agencies in their Geographic Information Systems. It is the City’s intention to select one successful respondent to deliver all of these services.

I. SCOPE OF WORK

The proposed project involves ground control, color digital aerial photography acquisition, LIDAR acquisition, digital orthophoto mapping, and digital topographic mapping. A description of each task is provided to help guide firms in the formulation of responses to this RFP.

Project Area

The area covered by this proposal is described as 1,392 square miles primarily in Minnehaha County and Lincoln County, South Dakota. Variations of digital orthophoto scale and pixel size are described in the following scope of work.

Ground Control

It is the contractor's responsibility to furnish basic ground control, pre-marking, and airborne Global Positioning System (GPS) services, sufficient to meet the specifications of the digital orthophoto program, digital topographic mapping, and LIDAR acquisition. The contractor may propose to utilize existing control information from previous ground control surveys. Many of the control locations used for previous aerial photography projects are not permanent control points. A map of existing control points may be obtained from the City of Sioux Falls GIS Department. The selected contractor will complete all paneling, maintain paneling as needed, and remove all of the targeting materials after the flights.

Accuracy Requirements: It shall be the responsibility of the Contractor to ensure that the final product meets National Standards of Map Accuracy at the specified scale. Survey and control standards must comply with the FGCC standards and
specifications for geodetic control networks as referenced in the US Army Corps of Engineers Photogrammetric Mapping/Engineering Manual. Establishment of the ground control for the work is regulated by Article 36-18A-4 as a practice of land surveying, and requires that the person in charge be licensed as a land surveyor by the State of South Dakota. The following projection parameters will be adhered to:

Projection: Universal Transverse Mercator, Zone 14
Horizontal Datum: NAD 83
Vertical Datum: NAD 88
Units: US Survey Feet

Digital Imagery Specifications

**Digital Aerial Camera:** Imagery shall be collected utilizing a direct digital aerial mapping camera without the use of film. The contractor must use a camera that is certified by the USGS or prove the camera system has been calibrated, modeling all known errors, and exhibits a high degree of internal geometric accuracy and meets or exceeds USGS standards. Specifications of all proposed digital aerial cameras must be submitted with the proposal.

**Photographic Conditions:** Color Aerial photography shall be acquired during the leaf-free season in the spring of 2008 during the period when deciduous trees are barren. Photography will not be taken when the ground is obscured by snow, haze, fog, dust, or when cloud shadows will appear on more than five percent (5%) of the area in any one photo. Photography will not be taken when the ground is obscured by flood water, snow, or ice.

**Flight Planning:** The proposed approach to aerial photography acquisition should outline the respondents intended flight plan including proposed date and time of photography, flight height, scale, flight lines, endlap and sidelap, planned aerial equipment, materials, and relevant quality control procedures. The aerial acquisition will extend two exposures beyond the mapping limits to obtain full orthophoto images and to reach pre-targeted ground control points, as necessary. Full Analytical Aerial Triangulation (FAAT) techniques shall be used in conjunction with ground control to establish a consistent horizontal datum for the entire project area.

**Orthophoto Scale:** The respondents shall meet the National Map Accuracy Standards (NMAS) for three proposed scales. The flight height necessary to obtain the output scale and accuracy required should be documented in the proposal. The following areas are shown on the map in Figure 1.

Area A – 6” pixel, 1” = 100’ map scale, 216 square miles (City of Sioux Falls Area)
Area B – 1’ pixel, 1” = 200’ map scale, 38 square miles (Municipalities in Lincoln Co.)
Area C – 2’ pixel, 1” = 400’ map scale, 814 square miles (Minnehaha County)
Area D – 2’ pixel, 1” = 400’ map scale, 581 square miles (Lincoln County)
The two foot pixel area should be processed as a complete mosaic of each county and the total, in square miles, includes the 6” and 1’ pixel areas.
The raw resolution of the imagery must be acquired at a ground sample distance of no more than 93% of the final output resolution required for each orthophoto scale requested.
Figure 1. Areas A, B, C, and D

Legend
- Rivers
- Interstate
- PLS Section Lines
- Municipalities
- A. 6” Pix. (216 Sq.mi.)
- B. 1” Pix. (38 Sq.mi.)
- C. 2” Pix. Min. (814 Sq.mi.)
- D. 2” Pix. Lin. (581 Sq.mi.)

2008 Digital Orthophoto Project Areas

MINNEHAHA COUNTY

LINCOLN COUNTY
Digital Orthophoto Mapping

**Imagery Resolution:** Digital Orthophoto Imagery shall be produced for all of the areas shown in figure 1. The six-inch (6”) pixel imagery shall be rectified to the newly produced LIDAR DTM. The one foot (1’) and two foot (2’) pixel imagery shall be rectified to the LIDAR DTM or, in areas LIDAR was not collected, to an existing USGS DEM to produce the orthophoto imagery.

**Image Quality and Tone Balancing:** The delivery of the orthophotography shall be tiled and provide seamless coverage. The tiling scheme will follow a one square mile scheme provided by the project manager or a recommended scheme agreed upon by the City, the two counties, and the contractor. The digital images are to be edge matched with no pixel gaps between geographic partitions. Density matching of digital ortho images is required to create the appearance of a seamless mosaic. The 2.0 foot pixel imagery shall be a mosaic for each of the entire two county areas. Respondents are expected to identify the quality assurance and checking procedures that will be employed to guarantee proper tone balancing and overall image quality. Three complete sets of the imagery shall be delivered on three external computer hard-drives (purchased by the contractor) in a standard GeoTIFF file format and ERDAS Imagine (.img) file format. One complete set of the images shall be delivered on DVD for backup and storage.

**Compressed Image Files:** MrSID compressed image file(s) shall be made for each square mile image tile (or tile size agreed upon by the three agencies and contractor) of both the 2 foot pixel and 6 inch pixel imagery. MrSID images shall also be developed for mosaics of the two county area of 2.0 foot pixel imagery, a 5.0 foot pixel mosaic of the two county area, and a 6 inch pixel mosaic of area A. Exact compression specifications for the Mr. SID format will be worked out with the selected firm as part of contractual arrangements.

**LIDAR and Digital Terrain Model (DTM)**

**LIDAR Acquisition Area:** The proposed LIDAR acquisition and DTM capture area is approximately 726 square miles in Lincoln County and a portion of Minnehaha County within the vicinity of the City of Sioux Falls. The final LIDAR acquisition area may be altered based on the proposed estimate of services.

**LIDAR Collection and Filtering:** Two LIDAR specifications are being proposed for the areas shown in figure 2. Area 1 is approximately 400 square miles and Area 2 is 326 square miles. In both areas the collection specifications will meet the following minimum specifications:

LIDAR ground sample distance (GSD) shall be 1.4 meter average point spacing
Vertical accuracy of the LIDAR data shall be 18.5 cm
Horizontal accuracy shall be 1 meter
Figure 2. LIDAR Areas 1 and 2

Legend
- River
- Interstate
- PLS Section Lines
- Municipalities
- Area 1 (400 Sq. mi.)
- Area 2 (326 Sq. mi.)

MINNEHAHA COUNTY

LINCOLN COUNTY

2008 LIDAR Project Areas
**LIDAR Mass Points:** Mass point data shall be delivered in LAS files compatible with the LAS Specification 1.1 format. The mass point data shall not contain any data voids and overlap between flight lines shall be removed. The classification code for these files will follow the LAS 1.1 format and will include the following:

- Class 1 = Unclassified – all features not in classes 2 or 9 (vegetation, buildings)
- Class 2 = Ground
- Class 9 = Water

**Additional LIDAR Guidelines for Area 1 Only**


**Breakline Specifications for Area 1:** Breaklines shall be delineated to insure the digital terrain model (DTM) is hydrologically correct and meets NSSDA accuracy standards. Additional breaklines will be captured if necessary for the development of two foot contours. The breakline dataset will be delivered in ESRI Feature Class format consisting of polyline-z objects. Elevation values for the breaklines will be derived from the bare-earth LiDAR. Separate feature classes must be delivered for each breakline feature defined below.

- Breaklines on edge of pavement for roads and other transportation features
- Hydrographic breaklines will cut through photo interpreted culverts and bridges to allow water to flow down stream network
- Single line stream centerlines for streams <4 feet wide will be created at the bottom of the channel
- For streams >4 feet wide at the bottom of the channel, double breaklines will be digitized only at the bottom of both sides of the channel at the land/water interface (but not at the top of bank). Islands in the rivers shall have breaklines around them so they don’t get leveled with the rest of the river channel
- Drainage ditches including roadside ditches (single line <4 feet wide and double line >4 feet)
- Drainage ditches including roadside ditches (double line >4 feet wide at bottom of channel),
- Water bodies (ponds, lakes, reservoirs) greater then 1/4 acre in size
- Single line breakline on each side at the top edge of a levee or dam
- Single line breakline through the outlet of a dam
**Topographic Elevation Contours:** Two foot (2’) contours will be generated for Area 1 and four foot (4’) contours will be generated for Area 2. Contours shall be generated from the LIDAR-derived data filtered to bare-earth and shall be certified to meet or exceed National Map Accuracy standards for two-foot and four-foot contours. The final contour lines shall have z-values for each contour line. Elevation values shall be assigned to contour lines as attributes. The contour lines will be smoothed, continuous, and not be broken. Lines will be topologically clean with the minimum necessary number of pseudo and dangle nodes.

**Deliverables**

**Geospatial Data:**

- A geodatabase point feature class of ground control used for the project
- LIDAR Point Cloud -ASPRS .LAS format with points classified 1, 2, and 9
- Digital Elevation Model
- Digital Terrain Model -Breakline enforced bare-earth ESRI grid format and .LAS
- Hydro-enforced 3-D breakline features in ESRI Geodatabase format
- Digital Elevation Contours with attributes of index and intermediate values in ESRI Geodatabase format
- Digital Orthophotography

**Metadata:** For each set of data produced under this contract, the vendor shall deliver a metadata document compatible with the FGDC Content Standards for Digital Geospatial Metadata.

**Ownership of Product:** All maps, photographs, documents, reports or digital data prepared or completed during the performance of services specified in this RFP shall become the property of the City of Sioux Falls, Minnehaha County, or Lincoln County, and shall not be copyrighted by the proposer. Also, the same materials 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 purchasing agency. All City and County departments will have unrestricted access and use of the products and deliverables at the sole discretion of the agencies involved.
III. FIRMS INTERESTED IN PROVIDING AERIAL PHOTOGRAPHY AND MAPPING SERVICES ARE REQUESTED TO SUBMIT THE FOLLOWING INFORMATION.

Submission of Proposals

It is intended that each respondent furnish all information requested in this document. Each respondent shall be required to include the following items in their proposal. These items should be used as the format around which the proposal is organized. Exclusion of any of these items could be grounds for proposal rejection by the City.

A. Transmittal Letter. A letter of transmittal, not to exceed two pages in length, which bears the signature of an authorized representative of the respondent and designates by name not more than two individuals authorized to negotiate and sign an agreement with the City on behalf of the respondent.

B. Organizational Description. A description of your organization, including qualifications addressing your organization's capability to provide the services requested. Also include a description of your understanding of the City's needs in the proposed project and your staffing commitments to assure your ability to meet the City's time frame. Please describe past client projects you have completed that are similar in nature to that proposed in this document. This must also include a description of additional subcontractors and associations with other firms you wish to utilize in the performance of the tasks, including the intended working relationships and responsibilities of each.

C. Product Procedures. Describe how you will produce each of the products requested in this RFP. This must include the methods used and quality control and quality assurance procedures that will be observed. The minimum data product specifications described under each work component must be met. Subcontractors or other firms that will work on the project must also be identified, including the general nature and scope of work that will be undertaken by these firms.

D. Project Schedule. Include a schedule or time line for completing the work specified in this request, including a progress reporting strategy.

E. City Obligations. Provide a list of all items to be provided by the City to assist you in completing the requested work. This should include any data and/or proposed use of staff, office space, and any equipment or materials/supplies that will be expected from the City. This component should also describe a strategy for project management indicating the mechanisms intended to be used to coordinate the proposed work with the City.
F. **Product Example.** Provide an example digital orthophoto image file and DTM and contour data set(s) from similar work completed by your organization. The digital orthophoto image should be delivered in a GeoTIF file format and an ERDAS Imagine (img) file format. The example DTM and contours should be delivered in a standard ESRI format.

G. **References.** Each proposal must provide the name, address, and phone number of five (5) individuals from organizations that have procured similar services to act as references for the respondent. The individuals identified must at least hold a position of project management or other contract authority.

H. **Statement of Estimated Cost of Services.** A separate price for each project component shall be submitted in a separate sealed envelope. Please note that some project components requested may not be pursued or may be limited in scope depending upon availability of funds.

**Evaluation of Proposal Schedule**

A consultant selection team comprised of Sioux Falls Public Works Administration, Engineering, and GIS, along with Minnehaha County, Lincoln County, and SECOG will review all proposals. The selection team shall select the firm they feel will supply the best and most complete effort. The selection of a qualified firm will be made no later than January 11, 2008. Selection will be based on the proposals and subsequent oral interviews, if needed. Proposal evaluations shall proceed on the following schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>November 21, 2007</td>
<td>RFP Posted on Website</td>
</tr>
<tr>
<td>December 14, 2007</td>
<td>Deadline for Questions</td>
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<tr>
<td>December 21, 2007</td>
<td>Proposals received at City Hall</td>
</tr>
<tr>
<td>January 11, 2008</td>
<td>Oral interviews if necessary</td>
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<tr>
<td>January 18, 2008</td>
<td>Select consultant and prepare agreement</td>
</tr>
<tr>
<td>February-March 2008</td>
<td>Acquisition of Survey Control and Paneling</td>
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<tr>
<td>April 2008</td>
<td>Aerial Photography Acquisition</td>
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<tr>
<td>September 1, 2008</td>
<td>Final delivery of all products</td>
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Please furnish five copies of the proposals to Ms. Shannon Ausen, PE, Office of Public Works-Engineering, 224 West Ninth Street, Sioux Falls, SD 57117-7402 by 2:00 p.m. **Central Time, December 21, 2007.** Submittals received after the stated time will be returned unopened and will not be considered.
The Proposer’s *Statement of Estimated Cost of Services* should be sealed in an envelope separate from the main document.

Questions and/or Revisions to the Specifications and Requirements.

Questions about the proposal should be addressed in writing or email before **2:00 Central Time, December 14, 2007**, to: Ms. Shannon Ausen, Assistant City Engineer, Office of Public Works-Engineering, 224 West Ninth Street, Sioux Falls, SD  57104-6407 (605) 367-8601. Email address is [sausen@siouxfalls.org](mailto:sausen@siouxfalls.org). All questions will be posted daily on the City’s website on the Request for Proposals home page. This approach allows all respondents to receive the same information.

**Respondents are encouraged to monitor the website for daily updates.**

Respondents are expected to raise any questions, exceptions, or additions they have concerning the RFP document. If a respondent discovers any significant ambiguity, error, conflict, discrepancy, omission, or other deficiency in this RFP, they should immediately notify the above named individual of such error and request modification or clarification of the RFP document.

**Selection Process**

The selection committee will review all proposals which are submitted prior to the deadline. The selection committee reserves the right to reject any or all proposals or cancel the selection process at any time. The selection committee also reserves the right to request additional information or clarification from respondents, or to allow the correction of errors or omissions.

The selection committee will select the top firms which it determines to be the most qualified to provide the services requested. The selection committee may require, if necessary, each of these firms to make a presentation to the committee regarding its qualifications to perform the project. The top firms will then be ranked in order of qualifications. The selection committee will then attempt to negotiate a contract at a fair and reasonable price with the top-ranked firm. If unable to negotiate a contract with the top-ranked firm, negotiations will be terminated and the selection committee will then initiate negotiations with the second-ranked firm.

The selection committee shall have the final authority and discretion to make a selection based upon the qualifications, responsibility, and capabilities of respondents, the fairness of price and other factors. Any decision by the selection committee shall be final. The City of Sioux Falls will not be liable in any way for the costs incurred by respondents in replying to this RFP or the costs incurred in making a pre-selection presentation to the project selection committee.
General Requirements

The consultant shall make an effort to involve DBE/MBE businesses in this project.

The successful firm shall comply with the requirements of Title 49 CFR Part 21 and Title VI of the Civil Rights Act of 1964. The successful firm shall submit upon request quarterly Title VI (civil rights) State of Contractor reports to the SDDOT. The successful contractor shall provide services in compliance with the American with Disabilities Act of 1990.

Any and all resulting agreements from this RFP shall require the successful firm to provide and maintain professional liability insurance as well as worker’s compensation, public liability and property damage insurance in amounts set forth by the City of Sioux Falls policy in force at the time of agreement or subsequent revisions of said policy.

Federal funding will be utilized in this project; and thus, this project will be subject to all requirements that are incurred as a result.

No member officer or employee of the City of Sioux Falls, the State of South Dakota or SECOG or member of its governing body or of a local public body having jurisdiction within the metropolitan area during his or her tenure or one year thereafter shall have any interest, direct or indirect, in any resultant contract or the proceeds thereof.

Unless otherwise indicated the process shown shall not include taxes of any kind. All agency members are exempt from Federal Excise Tax under Chapter 32 of the Internal Revenue Code. The City of Sioux Falls is exempt from all state taxation including state sales and use taxes.

All work related to this project must be performed in the United States.
### Statement of Estimated Cost of Services

**Sioux Falls 2008 Aerial Photography and Mapping Services**

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit Cost</th>
<th>Extended Cost</th>
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<tbody>
<tr>
<td>I. Ground Control</td>
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<tr>
<td>Ground Control for Entire Project</td>
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<td>II-A. Digital Color Orthophotography (Option A)</td>
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<td>Digital Orthos Area A (0.5 foot)</td>
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<td>Digital Orthos Area B (1 foot)</td>
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<td>Digital Orthos Area C (2 foot)</td>
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<td>Digital Orthos Area D (2 foot)</td>
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<tr>
<td>II-B. Digital Color Orthophotography (Option B)</td>
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<tr>
<td>Digital Orthos Area D (1 foot)</td>
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<td>III. LIDAR Digital Topographic Mapping (DEM and Contours)</td>
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<td>LIDAR Mobilization</td>
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<td>LIDAR Area 1</td>
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<tr>
<td>LIDAR Area 2</td>
<td>$__________</td>
<td>$__________</td>
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<td>IV. Image File Conversion</td>
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<tr>
<td>MrSid files Lump Sum (files for each mosaic and each tile)</td>
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<td>$__________</td>
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**Total Estimated Cost of Services** $__________