



City of Concord, New Hampshire

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February 25, 2011

ADDENDUM NUMBER ONE

RFP 29-11

PRODUCTION OF TOPOGRAPHIC AND PLANIMETRIC DATA BY PHOTOGRAMMETRIC MAPPING

TO ALL FIRMS OF RECORD: This addendum forms a part of and modifies the proposal and contract documents and technical specifications for the project named above. The following additions, changes and clarifications are made to the original proposal documents:

1. **Question:** In the RFP document, there is a reference to an attachment called "Task Order Detail" of USGS Contract G10PC0026. Where can I find this attachment?
2. **Answer:** The "Task Order Detail" for USGS Contract G10PC0026 is attached for your review and records.

PLEASE BE ADVISED THAT THE PROPOSER MUST ACKNOWLEDGE RECEIPT OF ADDENDUM ONE AS PART OF THE PROPOSAL SUBMISSION.

CITY OF CONCORD, NEW HAMPSHIRE

DOUGLAS B. ROSS
PURCHASING MANAGER

TASK ORDER DETAIL

February 17, 2010

USGS CONTRACT: G10PC00026

CONTRACTOR:

TASK ORDER NUMBER: XXX (pending successful negotiation & award)

TASK NAME: New Hampshire State Wide Ortho

The Contractor shall furnish all facilities, labor, materials, and equipment, unless specifically identified otherwise, to provide the mapping services and products in accordance with the specifications, terms, and conditions contained in Contract No. G10PC00026 and the following requirements specific to this Task Order, and in accordance with Contractor's proposal dated _____, 2010 and in the amount of:

Task Order Fixed Price	\$
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SECTION C: DESCRIPTION/SPECIFICATIONS/WORK STATEMENT.

The following **Section C** additional requirements are applicable to this Task Order:

C.1. **Statement of Work (SOW):** Reference C.1 of the Contract. The **New Hampshire State Wide Ortho** Task Order shall provide high resolution 0.30m 4-band ortho imagery for a portion of the state of New Hampshire State Wide area and its offshore adjacent islands, including the buffer of 1,000 feet included in the shape file. The required portion of the state will lie south of a line extending E-W across the state such that the area south of the line will encompass approximately 3558 square miles (including water), as detailed in the project diagram and accompanying shapefile. In addition to the 0.30m statewide imagery, the contractor shall provide 0.15m imagery of the same collection and production specifications used for the 0.30m imagery for the identified upgrade areas. These areas are further described and identified in Attachment A, and defined in the shape file provided in Attachment B.

C.1.a. **DATA ACQUISITION:** This task order is to acquire high resolution ortho imagery which shall cover the area as described and defined in Attachment A and Attachment B of this task order.

C.1.a.(i) **Image Acquisition:** Image data collection shall be with the following minimum collection specifications:

C.1.a.(i)(a) **Resolution and Accuracy:** Imagery shall be 4-band natural color and CIR source imagery and shall be of sufficient resolution to support production of digital orthorectified images to a ground pixel resolution of 0.30 meters (nominal 1 foot) {or 0.15 meters (nominal 6") for upgrade areas} and to the specifications contained in C.1.b below.

- C.1.a.(i)(b) **Acquisition Window:** Acquisition window shall be during the spring acquisition season prior to the 2010 leaf-on season, estimated to run April 1 and run through mid-May (4/1-5/15).
- C.1.a.(i)(c) **Ground Sample Density (Resolution):** The required ground sample distance shall be 0.30m (1 foot) {0.15m for upgrade areas}.
- C.1.a.(i)(d) **Time of Day:** Image acquisition shall occur when the sun angle is greater than 30-degrees.
- C.1.a.(i)(e) **Acquisition Conditions:** Imagery shall be acquired only under conditions free from clouds and cloud shadows, smoke, haze, light streaks, snow, foliage, flooding, and excessive soil moisture.
- C.1.a.(i)(f) **Image Coverage:** The extent of image coverage over the project area shall be sufficient to ensure void areas do not exist within the defined project area. Delivery tiles which have portions of the tile outside of the defined project area **ARE** required to be filled to the tile boundaries. Void areas within the project area are unacceptable.
- C.1.a.(i)(g) **Non-image data:** Orthoimagery tiles shall not contain any non-image data. Non-image data includes photographic frame borders, fiducial marks, artifacts, and tiling.
- C.1.a.(i)(h) **Calibration:** *Reference 3.8.1.2 of the contract.* Aerial Sensors/Camera(s) used to acquire project imagery shall have current USGS certification, or in the case of digital sensors a current Product Characterization Report.
- C.1.a.(i)(i) **Camera Station Control:**
- (01) **Airborne GPS:** Camera position (ABGPS report, including x, y, z, omega, phi, kappa, and time stamp for each frame) shall be recorded at the instant of exposure with airborne GPS. Airborne GPS data shall be differentially corrected and organized as individual data sets grouped by corresponding flight line. Differentially corrected Airborne GPS positional data shall be stored on portable media, in a non-proprietary format mutually agreeable to the Government and the Contractor. The Contractor shall produce a statistical report summarizing the results of the airborne GPS adjustment.
- (02) **IMU Exterior Orientation Data:** The contractor shall record the camera attitude at the instant of exposure. The IMU data shall be adjusted and organized as individual data sets grouped by corresponding flight line. The Contractor shall produce a

statistical report summarizing the overall accuracy of the adjusted IMU data.

- C.1.b. **DIGITAL ORTHO IMAGE PRODUCTION:** All Ortho Images shall be produced consistent with the following requirements:
- C.1.b.(i) **Image Mosaicking:** Orthoimagery may be created using multiple digital images (“chips”) to produce the final product. Specular reflections and other artifacts should be minimized, especially in developed areas, by patching the area using chips from adjacent imagery.
- C.1.b.(i)(a) **Radiometry Balance:** When a mosaic of two or more chips is made, the brightness and color values of the other chips will be adjusted to match that of the principal chip. The seamlines between the overlapping chips will be chosen to minimize tonal variations. Localized adjustment of the brightness and color values will be done to reduce radiometric differences between join areas. Changes in color balance across the project, if they exist, shall be gradual. Abrupt tonal variations between tiles are not acceptable.
- C.1.b.(i)(b) **Radiometric Resolution:** All imagery that contains both natural color and near-IR shall be in accordance with Section 6, RGB Full Color Images, of the TIFF Specification (<http://www.remotesensing.org/geotiff/spec/geotiffhome.html>), and shall have the bands saved in the following order: Red, Green, Blue, and Infrared.
- C.1.b.(i)(c) **Digital orthophoto characteristics:** Relative join (misalignment) of transportation features between adjacent image chips/tiles shall not exceed 3 pixels. Orthophotos shall be tonally balanced to produce a uniform contrast and tone across the image tiles of the entire project.
- (01) Changes in color balance across the project, if they exist, shall be gradual. Abrupt tonal variations between tiles are not acceptable. Building tilt shall be corrected to the extent that transportation features are not obscured.
 - (02) Ground features appearing in the orthophoto imagery, such as building roof tops, water towers, and radio towers, shall not be clipped at seamlines or between individual tiles.
- C.1.b.(ii) **The contractor shall deliver:** uncompressed-geotiff orthorectified imagery and corresponding metadata for the entire area.
- C.1.b.(ii)(a) Ortho products shall maintain resolution of original image capture. Imagery captured at one resolution shall not be resampled to a higher image resolution. This shall not prohibit imagery collected at a higher resolution from being resampled to a lower resolution.

- C.1.b.(ii)(b) Every frame shall be used in the ortho process to minimize radial distortion in imagery.
- C.1.b.(ii)(c) The orthophotography shall include all imagery including the off shore waters included within the 1000' buffers provided for in the attached shape file.
- C.1.b.(iii) **Ground Resolution:** The spatial resolution will be 30 centimeter ground sample distance (GSD). Orthoimagery produced under this specification shall not be resampled from the original image, original scan or original capture, with resolution greater or less than the following numbers:

Ground Sample Distance (GSD)	Original Image Resolution	
	Maximum	Minimum
30 centimeters	15 centimeters	32 centimeters

- C.1.b.(iv) **Digital Orthorectified Image Horizontal Accuracy:** For 0.30 meter Ortho image horizontal positional accuracy shall not exceed 0.62-meters Root Mean Squared (RMSE) Error XY (0.87 meter RMSE X or Y).
- C.1.b.(v) **Digital Orthorectified Image Horizontal Accuracy:** For 0.15 meter Ortho image horizontal positional accuracy shall not exceed 0.31-meters Root Mean Squared (RMSE) Error XY (0.44 meter RMSE X or Y).
- C.1.b.(vi) **Digital Orthorectified Image Format:** Images shall be submitted in uncompressed, untiled, ArcGIS readable, GeoTIFF file format with no internal tiling or overviews. Data shall not be compressed during ANY PHASE of the production process. Presence of compression artifacts will be cause for rejection. GeoTIFF files shall include the following GeoTIFF tags and keys:
- C.1.b.(vi)(a) ModelTiepointTag
 - C.1.b.(vi)(b) ModelPixelScaleTag
 - C.1.b.(vi)(c) GTModelTypeGeoKey
 - C.1.b.(vi)(d) GTRasterTypeGeoKey
 - C.1.b.(vi)(e) ProjectedCSTypeGeoKey
 - C.1.b.(vi)(f) PCSCitationGeoKey
 - C.1.b.(vi)(g) ProjLinearUnitsGeoKey
- C.1.b.(vii) **Digital Orthorectified Image Datum:** Digital Orthorectified images shall be referenced to North American Datum 1983, Universal Transverse Mercator (UTM) meters, Zone 18 or 19 as appropriate. Tiles falling in both zones shall be delivered in both projections. Additionally, images shall be also delivered

which are referenced to New Hampshire State Plane, Zone 2800, Standard Feet.

C.1.b.(vii)(a) **Digital Orthorectified Image Tile Size:** Orthorectified GeoTIFF files shall represent "tiles" 1500 meters X 1500 meters cut at even 1500 meter grid lines with no tile overedge.

- (01) Corner coordinates will be based on the UTM Grid and shall be evenly divisible by 1500 meters.
- (02) Tiles shall be accompanied by an index sheet and shape file suitable for loading into ArcGIS.
- (03) Index sheet shall include tile boundary and filename.
- (04) The Index sheet collar shall include Latitude/Longitude reference coordinates.

C.1.b.(vii)(b) **Digital Orthorectified Image Tile Size:** Orthorectified GeoTIFF files shall represent "tiles" 5000 feet X 5000 feet cut at even 5000 foot grid lines with no tile overedge.

- (01) Corner coordinates will be based on the New Hampshire State Plane coordinate system Zone 2800 and shall be evenly divisible by 5000 feet.
- (02) Tiles shall be accompanied by an index sheet and shape file suitable for loading into ArcGIS.
- (03) Index sheet shall include tile boundary and filename.
- (04) The Index sheet collar shall include Latitude/Longitude reference coordinates.

C.1.b.(viii) **File Naming Convention:**

C.1.b.(viii)(a) **UTM:** The 1500 meter x 1500 meter ortho tile file name shall be derived from the southwest corner of each tile and shall be based on the U.S. National Grid. File names will include Grid Zone Designation (GZD), 100,000 meter block designator and X and Y grid coordinates truncated to 100 meters. Supplemental instructions for naming Digital Orthorectified Image tiles are included in Attachment C, U.S. National Grid, of this task order.

C.1.b.(viii)(b) **State Plane:** The 5000 foot x 5000 foot ortho tile file name shall be derived from the southwest corner of each tile. The prefix shall comprise 10-digits, consisting of a 5-digit x value derived from the x grid-coordinate, truncated to 100 feet, with leading zeros as required, concatenated with a 5-digit y value derived from the y grid-coordinate truncated to 100 ft, with leading zeros as required.

- C.1.b.(ix) **Horizontal Accuracy:** All orthoimagery shall have 95% (NSSDA Confidence Interval) of all well-defined points tested fall within the specified distance listed below of true ground:
- C.1.b.(ix)(a) **30 cm GSD** shall be 1.52 meters
- C.1.b.(ix)(b) **15 cm GSD** shall be 0.76 meters
- C.1.b.(x) **Product Accuracy Information Reporting.** Product accuracy information shall be reported according to NSSDA guidelines which are available at: <http://www.fgdc.gov/standards/projects/FGDC-standards-projects/accuracy/part3/index.html>
- C.1.b.(xi) At a minimum, statements concerning source materials and production processes used must be provided at the project level sufficient to meet the requirement of section III.E of the guidelines.
- C.1.b.(xii) **Elevation data:** Elevation data created for use in the orthorectification process shall be submitted, with associated documentation, in a common or non-proprietary format.
- C.1.c. **FLIGHT DIAGRAM:** The Contractor shall produce, in softcopy format, a Flight Diagram which illustrates the project area outline, flight lines, image identification, and approximate location of image centers.
- C.1.d. **METADATA:** Project and file metadata describing the orthophoto production process shall be submitted as a deliverable.
- C.1.d.(i) Federal Geographic Data Committee (FGDC) compliant metadata shall be provided in extensible markup language (.xml) format for each 1500-meter x 1500-meter and for each 5000-foot x 5000-foot orthorectified tile.
- C.1.d.(ii) FGDC compliant metadata for orthoimage tiles shall be delivered on portable media, in the file format mutually agreeable to the Government and the Contractor.
- C.1.d.(iii) This site contains the files designed to define and support production of FGDC compliant metadata: Download the following files from <ftp://ftpext.usgs.gov/pub/cr/mo/rolla/release/xmlinput/>
- C.1.d.(iii)(a) **XMLInput1_64.zip:** Contains an application (XMLInput) for creating and editing .xml metadata files. It is not mandatory that this software is used; it is merely available to you. When the zip file is unzipped, it also contains a template (**133UAtemplate.xml**) and a dtd (**csdgm2.dtd**) to help with FGDC compliance. The **XMLInput.jar** is the executable.
- C.1.d.(iii)(b) **Help.pdf and XMLInput123.doc:** User's guide for XML Input. Use this guide to install and use XMLInput.

- C.1.d.(iii)(c) **metadata_overview.doc:** Additional information.
- C.1.d.(iii)(d) **Metadata Parser (MP):** Is a compiler that checks for syntax errors against the FGDC Content Standard for Digital Geospatial Metadata and generates output suitable for viewing in a web browser or text editor. MP may be downloaded to your computer for an interactive validation of your metadata files, or accessed online for an automated validation.
- (01) To download **mp**, go to <http://geology.usgs.gov/tools/metadata/>
- (02) To use **mp** online, go to <http://geo-nsdi.er.usgs.gov/validate.php>
- C.1.e. **MrSid Compressed Image Tiles:** MrSid compressed image shall be delivered for 0.30m State Plane imagery only. For **each** ortho image the contractor shall produce and deliver a corresponding MrSid Compressed Image tile with a compression ratio of 50:1. MrSid images are not to be mosaics, but to be the same extents as each delivery tile.
- C.1.f. **DELIVERABLES SUMMARY:**
- C.1.f.(i) **Calibration Reports:** Camera Calibration Report(s) for Aerial Camera(s), or in the case of digital sensors, a current Product Characterization Report of the instrument used shall be included as a deliverable.
- C.1.f.(ii) **Camera Station Control:**
- C.1.f.(ii)(a) **Airborne GPS:** Positional data and statistical summary report shall be submitted on portable media, in a non-proprietary format mutually agreeable to the Government and the Contractor. The ABGPS report shall also include x, y, z, omega, phi, kappa, and time stamp for each frame
- C.1.f.(ii)(b) **IMU Data:** If IMU exterior orientation data is part of the Contractors Technical Proposal, the Contractor shall submit this sensor orientation data and a statistical summary report on portable media, in a non-proprietary format mutually agreeable to the Government and the Contractor.
- C.1.f.(ii)(c) **Accuracy Specifications:**
- (01) **Airborne GPS:** The horizontal root-mean-square error (RMSE) of the airborne GPS control data shall not exceed 20cm. The vertical RMSE of the Airborne GPS control shall not exceed 30cm.
- (02) **IMU:** If IMU is included as a component of the camera station control; the contractor shall record the camera attitude at the instant of exposure. The IMU data shall be adjusted and organized

- C.1.f.(viii) **Metadata** shall be FGDC compliant and shall be project and tile (file) level. Tile level metadata shall have one corresponding metadata file for each imagery tile (UTM, Stateplane, and MrSID)
- C.1.f.(ix) **Production, Project, and Supplemental Reports** as specified.
- C.1.g. **NOTIFICATION:** The Government POC named below shall be notified within 24 hours of the start of acquisition of data. Notification can be made by e-mail and is for information purposes only, not permission to proceed.
- C.1.h. **PERMITS:** The contractor shall be responsible for obtaining all permits which may be required in the performance of this task order, which shall include, but not be limited to any permits for acquisition of data in controlled or restricted airspace, and access to control points on the ground.
- C.1.i. **USE AND DISTRIBUTION RIGHTS:** All imagery and data produced under this agreement shall become the property of the United States Government. All data and documentation shall be free from restrictions regarding use and distribution. Data and documentation shall be freely distributable by government agencies.
- C.1.j. **CERTIFICATIONS:** The contractor shall certify as part of its proposal that the work performed on this task order complies with Section 52.225-05 of the Federal Acquisition Regulations relating to Trade Agreements.
- C.1.k. **THE GOVERNMENT POINT-OF-CONTACT (POC)** for this task order is:
- | | |
|-----------------------------------|----------------------------------|
| Address: USGS/NGTOC | Telephone: (573) 308-3612 |
| ATTN: Robert Kelly, MS 668 | FAX: (573)-308-3810 |
| Rolla Federal Center | e-mail: ckelly@usgs.gov |
| 1400 Independence Road | |
| Rolla, MO 6540 | |
- C.2. **Digital Deliverables:** Reference 3.11 of the Contract.
- C.2.a. **The Contractor shall deliver the following copies** of the Ortho Image data products and documentation as specified in Section C.1 of this Task Order.
- C.2.a.(i) **0.30 meter imagery**
- C.2.a.(i)(a) **One (1)** complete set of UTM projection data
- C.2.a.(i)(b) **Two (2)** complete sets of State Plane projection data on separate drives.
- C.2.a.(ii) **0.15 meter imagery**
- C.2.a.(ii)(a) **One (1)** complete set of UTM projection data
- C.2.a.(ii)(b) **Two (2)** complete sets of State Plane projection data on separate drives

- C.2.a.(ii)(c) **One (1) Subset** of State Plane projection data on **separate** drives for each **(41 drives total)** of the participating towns in this project (including 1000' overedges for each town); *Farmington; *Franklin; *Hanover; *Peterborough; *Swanzey; *Warner; Auburn; Bow; Candia; Concord; Derry; Dover; Durham; East Kingston; Exeter; Greenland; Hampton; Hampton Falls; Hooksett; Hudson; Kensington; Litchfield; Londonderry; Madbury; Manchester; Merrimack; New Castle; Newfields; Newington; Newmarket; North Hampton; Pelham; Portsmouth; Rollinsford; Rye; Salem; Seabrook; Somersworth; South Hampton; Stratham; Windham;
- C.2.a.(ii)(d) **Towns marked by *** are to be flown last if there is concern about completing this project in the spring 2010 flying season. It is possible that some of these towns may not be flown at time of award.
- C.2.a.(iii) **Stereo Pair Imagery:** shall be included as specified:
- C.2.a.(iii)(a) **0.30 meter Imagery** - on each delivery drive of the complete Statewide UTM and Stateplane deliverables for 0.30 meter imagery.
- C.2.a.(iii)(b) **0.15 meter Imagery** on each delivery drive of the complete UTM and Stateplane deliverable for 0.15 meter imagery.
- C.2.b. **Format:** Data shall be delivered in the formats specified in C.1 above.
- C.2.c. **Delivery Medium:** The digital data shall be delivered on external hard drive, i.e. (firewire, or USB2 – Less than USB2 is not acceptable).
- C.2.d. **Deliverable Validation:** Reference 3.12 of the Contract. The Government may choose to contract with a separate contractor for validation on all submitted deliverables.

SECTION D: - PACKAGING AND MARKING

- D.1. No additional Section D requirements are applicable to this Task Order.

SECTION E: - INSPECTION AND ACCEPTANCE - The following Section E additional requirements are applicable to this Task Order:

- E.1. **Inspection Period:** Reference GS0720 of the Contract. The inspection period begins the day after the data has been delivered. All deliverables will be validated within a **sixty (60) calendar-day** inspection period
- E.2. **Inspection and Acceptance Procedures:** Reference E780 of the Contract. The Government will perform a full inspection of all deliverables in accordance with E780 (b) of the Contract.

- E.3. **Nonconforming deliverables:** Nonconforming deliverables returned to contractor for rework shall be delivered in accordance with Contract clause E784.

SECTION F: - DELIVERIES OR PERFORMANCE - The following Section F additional requirements are applicable to this Task Order:

- F.1. **Place of Delivery:** Reference GS0904 of the Contract. Contractor shall submit all requested deliverables to the address of the POC, as shown in Section C of this Task Order.
- F.2. **Proposed Delivery Schedule:** Reference F981 of the Contract. The Government requires the following delivery schedule:
- F.2.a. **Delivery Lot One (1):** Consisting of orthorectified Statewide 0.30 meter UTM tiled imagery, metadata, reports, and other associated deliverables, including stereo pairs, shall be delivered 90 calendar days following acquisition of imagery, but no later than August 15, 2010.
- F.2.b. **Delivery Lot Two (2):** Consisting of orthorectified State Plane 0.30 meter tiled imagery, metadata, reports, and other associated deliverables, shall be delivered 60 calendar days following acceptance of 0.30 meter UTM imagery, but no later than November 15, 2010.
- F.2.c. **Delivery Lot Three (3):** Consisting of orthorectified 0.15 meter UTM tiled imagery, metadata, reports, and other associated deliverables including stereo pairs, shall be delivered 120 days following acquisition of imagery, but no later than September 15, 2010.
- F.2.d. **Delivery Lot Four (4):** Consisting of orthorectified 0.15 meter Stateplane tiled imagery, metadata, reports, and other associated deliverables, shall be delivered 60 calendar days following acceptance of 0.15 meter UTM imagery, but no later than December 15, 2010.
- F.3. **Negotiated Delivery Date(s)** for Task Order:
- F.3.a. **Delivery Lot One (1):** Consisting of orthorectified Statewide 0.30 meter UTM tiled imagery, metadata, reports, and other associated deliverables including stereo pairs, shall be delivered 90 calendar days following acquisition of imagery, but no later than (TO BE NEGOTIATED).
- F.3.b. **Delivery Lot Two (2):** Consisting of orthorectified State Plane 0.30 meter tiled imagery, metadata, reports, and other associated deliverables, shall be delivered 60 calendar days following acceptance of 0.30 meter UTM imagery, but no later than (TO BE NEGOTIATED).