

File NO. 5141 Photogrammetry and GIS Base Map Development, Thursday, January 28, 2010  
 @ 11:00 a.m.

FORMAL BID	Item/Schedule		
FILE NO: 5141	Term of Contract		
COMMODITY: Photogrammetry and GIS Base Map Development	Options		
NAME OF BIDDER:	Perf Bond	Payment Bond	Insurance
BIDDER'S FED. ID.	Yes No	Yes No	Yes No

TO: Cynthia H. Griffin, Purchasing Agent  
 795 Massachusetts Avenue, Room 303  
 Cambridge, MA 02139

PH: (617)349-4310 FX: (617)349- 4008

The undersigned submits this sealed bid to provide the commodity or services identified above, described in the specifications herein and advertised in the **CAMBRIDGE CHRONICLE** on **THURSDAY, January 14, 2010**, which is to be opened and publicly read at the Office of the Purchasing Agent, City Hall, 795 Mass. Ave., Room 303, Cambridge, MA at 11:00 a.m. on **Thursday, January 28, 2010**. **Parking is limited at this location. It is strongly recommended that bids are mailed or delivered in advanced of the due date and time. Late proposals will not be accepted. This bid may be downloaded from the City's web site, [www.CambridgeMA.gov](http://www.CambridgeMA.gov), Online Services, Current Bid List, File No. 5141.**

The undersigned certifies that this bid is made without collusion with any other person, firm or corporation making any other bid or who otherwise would make a bid. The undersigned agrees to furnish the commodity or services in strict accordance with the bid documents, which consist of this Formal Bid and all attachments hereto. **"The submitted bid must be without conditions, exceptions or modifications to the bid document"**.

The envelope containing the bid must be labeled: "This envelope contains a bid for **Photogrammetry and GIS Base Map Development** opened at **11:00 A.M. on Thursday, January 28, 2010**". **The bid and all documents submitted with it are public records.**

This bid process and the award of the contract are made in conformity with M.G.L. c. 30B, unless otherwise stated. See other side of this form for General Terms and Conditions that shall become part of any Contract awarded through this Formal Bid.

This bid includes addenda numbered: \_\_\_\_\_

SIGNATURE OF BIDDER: \_\_\_\_\_

TITLE OF SIGNATORY \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

ADDRESS OF BIDDER \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_ FAX NUMBER: \_\_\_\_\_

Please check one of the following and insert the requested information:

( ) Corporation, incorporated in the State of: \_\_\_\_\_

( ) Partnership. Names of partners: \_\_\_\_\_

( ) Individual: \_\_\_\_\_

Name of Bidder: \_\_\_\_\_

**GENERAL TERMS AND CONDITIONS**

**LAWS:** All deliveries shall conform in every respect with all applicable laws of the Federal government, Commonwealth of Massachusetts and City of Cambridge.

**EQUAL OPPORTUNITY:** The Vendor in the performance of the contract shall not discriminate on the grounds of race, color, religious creed, national origin or ancestry, age, disability, sexual orientation, marital status, family status, military status, source of income, or sex in employment practices or in the selection or retention of subcontractors, and in the procurement of materials or rental of equipment. The City may cancel, terminate or suspend the contract in whole or in part for any violation of this paragraph

**TAXES:** Purchases made by the City are exempt from the payment of Federal excise tax and the payment of Commonwealth of Massachusetts sales tax (except for gasoline) and any such taxes must not be included in the bid prices.

**QUANTITIES:** Unless otherwise stated, the quantities set forth herein are ESTIMATES ONLY. The City reserves the right to purchase the commodity(ies) specified in any amount less than the estimated amount.

**BID PRICES:** Bid prices shall include transportation and delivery charges fully prepaid to the City of Cambridge destination. Where the unit price and the total price are at variance, the unit price will prevail.

**DELIVERY AND PACKAGING:** Deliveries must be made in such quantities as called for in the purchase order and in the manufacturer's original packages. All deliveries must be "inside" delivery with no assistance from City personnel. Tailgate deliveries will not be accepted. Rejected material will be returned to the vendor at the vendor's expense.

**MODIFICATION OF BIDS:** Prior to bid opening, a bidder may correct, modify or withdraw its bid by making the request in writing prior to the time and date for the bid opening. All corrections and modifications must be delivered to the Purchasing Department in a sealed envelope indicating that it contains a modification or correction of the original bid submitted for the particular commodity and indicating the time and date of the bid opening.

**REJECTION OF BIDS:** The City reserves the right to reject any and all bids if it is in best interest of the City to do so.

**AWARD OF CONTRACT:** Contract(s) will be awarded within forty-five days of the bid opening unless award date is extended by consent of all parties concerned.

**INDEMNITY:** Unless otherwise provided by law, the Vendor will indemnify and hold harmless the City against any and all liability, loss, damages, costs or expenses for personal injury or damage to real or tangible personal property which the City may sustain, incur or be required to pay, arising out of or in connection with the performance of the Contract by reason of any negligent action/inaction or willful misconduct by the Contractor, its agents, servants or employees

**TERMINATION OF CONTRACT:** Except as otherwise provided in the Articles of Agreement, the City may terminate the contract upon seven days notice.

**ASSIGNABILITY:** The Vendor shall not assign, sell, subcontract or otherwise transfer any interest in this contract without the prior written consent of the City.

**MATERIAL SAFETY DATA SHEETS:** Pursuant to M.G.L. c. 111F, ss. 8, 9, and 10, any vendor who receives a contract resulting from this invitation agrees to submit a Material Safety Data Sheet for each toxic or hazardous substance or mixture containing such substance when deliveries are made. The vendor agrees to comply with all requirements set forth in the pertinent laws above.

**Name of Bidder:** \_\_\_\_\_

File NO. 5141 Photogrammetry and GIS Base Map Development, Thursday, January 28, 2010  
@ 11:00 a.m.

TO: Cynthia H. Griffin, Purchasing Agent  
City Hall, Cambridge, Massachusetts 02139

The undersigned hereby proposes to furnish all equipment, labor and materials required to provide Photogrammetry and GIS Base Map Development for the City of Cambridge IT Department, all in accordance with the attached specifications.

The contract shall commence on the date of execution of the contract by the City of Cambridge and shall be in effect for a 12 month period or upon completion of project. One award will be made to the responsive and responsible bidder offering the lowest total price not including the Optional Services. Prices must remain FIRM during the entire contract period. **The contractor must be able to begin work March 10, 2010.**

***A sample contract is attached hereto. The bidder must be willing to sign the City contract. The City will not accept a bidder's terms and conditions. PLEASE SUBMIT YOUR BID IN DUPLICATE.***

#### **Questions**

Questions concerning this Invitation to Bid including any exceptions to the specifications must be submitted in writing and faxed to the Office of the Purchasing Agent, Cynthia H. Griffin @ 617-349-4008. All questions must be submitted no later than **Thursday, January 21, 2010 by 4:00 p.m.** All Addendums will be posted on the Purchasing website to notify all bidders of the questions and answers. **Please check the website for Addendums before submitting your bid to the City. Bidders will not be notified individually of Addendums.**

Please check the bidders list on the website. If your firm is not listed on the bidders list please click on "Registry" and notify us that you have downloaded the bid document.

#### **Bid Results**

The tab sheet and the contract award information will not be mailed to the bidders individually. A tab sheet with the bid results will be posted to the website soon after the bid opening. The tab sheet will include the "contract award" information as soon as it is determined.

#### **Confidentiality and Public Records Law**

All bids or other materials submitted by the vendor in response to this Invitation to Bid will be open for inspection by any person and in accordance with the Massachusetts Public Records Law.

#### **Living Wage Requirements**

The City of Cambridge has a Living Wage Requirement that establishes minimum hourly rates for all Personnel that work on any City contract. The City of Cambridge's Living Wage as of March 1, 2009 is \$13.69 per hour. The Living Wage Requirements are attached. The living wage requirement of \$13.69 will be in effect for the life of the contract.

**The following documents are included with this Invitation for Bid and can be viewed as an electronic file by clicking on the attachments.**

**Attachment A- GeoDatabase Specification for GIS Planimetric and Topographic Data**

**Attachment B- Feature Capture Rate Form Instructions**

**Attachment C- Map-Extents of Planimetric and Orthophotography Coverage**

**Attachment D- Map-Public Properties and ways**

Name of Bidder: \_\_\_\_\_

**Insurance Requirements**

**Worker's Compensation.**

(Reference: M.G.L. c.149 §34A). Before commencing performance of the Contract, the **Contractor** shall provide by insurance for the payment of compensation and the furnishing of other benefits under M.G.L. C. 152 to all persons to be employed under the Contract, and the **Contractor** shall continue such insurance in full force and effect during the term of the Contract. Sufficient proof of compliance with this paragraph must be furnished at the time of execution of this Contract.

**Additional Insured.** Each policy must list the City of Cambridge as an additional named insured.

**Insurance Rating.** Any insurance carrier utilized to fulfill the insurance requirements of this Contract shall have a minimum A.M. Best rating of A-X.

**Premiums.** The **Contractor** must provide the required insurance at its own expense.

**Notice of Occurrence.** Notice of occurrence shall be given to the **City Manager, City of Cambridge, City Hall, 795 Massachusetts Avenue, Cambridge, MA 02139** and, at the option of the **Contractor**, any other **City** official permitted by law to receive notice.

**Waiver of Subrogation.** The **Contractor** and all Subcontractors waive subrogation rights against the **City** for all losses.

**Coverage Period.** Each insurance policy must cover the entire contract period.

**Policies and Limits.** The insurance required shall include all major divisions of coverage and shall be on a comprehensive general basis including Premises and Operations (including X-C-U), Owner's Protective (as a separate policy), Products and Completed Operations, and Owned, Non-owned, Leased, and Hired Motor Vehicles. Such insurance shall be written for not less than any limits of liability required by law or the following limits, whichever are greater:

Owner's Protective Liability		
Each Occurrence		\$500,000
Aggregate		\$1 Million
Commercial Liability		
General Aggregate		\$1 Million
Products Completed Operations		
Aggregate		\$500,000
Personal Injury and Advertising Limit		\$500,000
Each Occurrence		\$500,000
Automotive-for all owned, non-owned, hired and leased vehicles		
Combined single limit		\$500,000
or		
Bodily injury- each person		\$100,000
each accident		\$500,000
Property damage-each occurrence		\$500,000
Umbrella		
Combined single limit		\$500,000
General aggregate		\$500,000
Worker's Compensation		
Coverage A	Statutory	
Coverage B	Each Accident	\$100,000
	Disease-Policy limit	\$500,000
	Disease-Each Employee	\$100,000

**Excess Liability Insurance.**

The **Contractor** may purchase and maintain excess liability insurance in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance with the requirements set forth above. Any such amounts must be in addition to the umbrella limits required, must list all underlying policies, and must list the **City** as a named insured. Evidence of such excess liability shall be delivered to the **City** in the same form and manner as the required insurance policies.

**Amendment of Insurance Requirements.**

The **City** reserves the right, at its sole discretion, to amend the insurance requirements contained herein.

**Occurrence Basis**

All insurance shall be written on an occurrence basis, unless the **City** approves in writing coverage on a claims-made basis. Coverages whether written on an occurrence or a claims-made basis shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment.

**Certificates of Insurance.**

Certificates of Insurance acceptable to the **City** and confirming the insurance coverage required herein are attached to the Contract. The **City** shall have no obligation to execute the Contract and may award the Contract to the next lowest responsible and responsive bidder, if such insurance certificates have not been provided to the **City** within five (5) business days after presentation of the Contract to the Contractor for execution.

**Endorsements**

The **Contractor** shall furnish to the **City** copies of any endorsements that are subsequently issued amending limits of coverage.

**1 GENERAL INFORMATION**

**1.1 Project Overview**

The City of Cambridge (hereafter "the City") plans to contract for the following required deliverables as well as other data as defined in Section Deliverables:

- Aerial flyover to capture large-scale 4-band digital color imagery
- Creation of:
  - 1"=40' scale planimetric data set (as defined in the Attachment A)
  - 4-band digital orthophotos @ 3" pixel resolution

These data are to support the citywide geographic information system (GIS) program.

Optional deliverable (to be priced separately):

- Topographic contours with two-foot contour interval
- Unified impervious data set

**1.2 Certified Photogrammetrist and Surveyor**

An ASPRS Certified Photogrammetrist must supervise and certify the deliverables of this project. A Massachusetts registered Land Surveyor must manage and certify the ground control survey work. Proof of these qualifications must be submitted with the proposal.

**1.3 Deliverable Formats and Pricing**

All vector deliverables must be provided in ESRI file geodatabase format. Orthophotography shall be in geotif and MrSID. Other deliverables shall be in Word, Excel, or ASCII as appropriate.

Name of Bidder: \_\_\_\_\_

#### **1.4 Cambridge Vital Statistics**

The City of Cambridge has a land area of 6.43 sq. miles plus water bodies, for a total of 7.13 square miles. The population is 101,350. Cambridge is located in eastern Massachusetts, due north of Boston.

##### **1.4.1 Past Project History**

The City uses the following data sets with ESRI's GIS software products for the City GIS. See the GIS website <http://www.cambridgema.gov/GIS/>.

- In 1995, the City contracted for a 1"=100' basemap covering the City of Cambridge and automation of the Cambridge tax assessors parcel maps, water distribution system, and sewer – stormwater system. The 1995 basemap included ½' color orthophotos, full planimetrics data in ArcInfo coverage format, a DTM in ArcInfo format, spot elevations and 2' interval elevation contours in ArcInfo format.
- Utility infrastructure was collected City-wide during the same period by a combination of survey and GPS data collection techniques.
- In 2003, the City contracted for new 3" pixel color orthophotography, and an update of the 1995 basemap.
- 2009 LiDAR flown in late fall (leaves off). 1-meter spacing, accurate 15-cm vertical accuracy for bare earth (30 cm for other land categories). Processed for bare earth and aboveground points.

## 2 DESCRIPTION OF REQUIRED SERVICES

### 2.1 Project Areas

The City has defined the project area as the entirety of the City of Cambridge and 200' beyond the border. This project area includes a 200 foot buffer around the Cambridge City boundary. The Charles River shall have the shoreline outside the city boundary on the Boston side mapped with ortho imagery regardless of how many feet it extends beyond the boundary. Any features such as bridges that extend over the water bodies shall be included in the planimetric data. See Attachment C for a map of the study area.

### 2.2 Coordinate System

All deliverable data products should be delivered in the Massachusetts State Plane Coordinate System, Mainland Zone, US Survey Foot. The horizontal datum shall be the NAD1983 datum. Vertical Datum shall be NAVD1988.

### 2.3 Aerial Data Collection

The City requires new Spring 2010 digital aerial photographs to be created to serve as the basis of the required deliverables. The successful vendor shall comply with all Federal Aviation Administration (FAA) regulations and obtain all necessary flight clearances.

#### 2.3.1 Aerial Imagery

The City requires the use of a professional digital aerial camera for this project. The source imagery shall be collected using a large format camera such as the Leica ADS40 or the Zeiss/Intergraph Z/I DMC. The vendor should make the case for the use of the proposed camera. Airborne GPS shall be used with the camera as part of the image capture flight. On-board and ground-based GPS and Inertial Measurement Unit (IMU) equipment and methodologies shall be described in the proposal.

The sensors shall be properly calibrated to insure that data are of the highest radiometric quality and are consistent across the project area. All data bands shall be collected at a minimum depth of 8-bits per band.

The imagery shall be collected using the appropriate blue, green, red and near infrared bands required to create natural color and color infrared data sets. Band to band alignment of the sensor must be of sufficient accuracy to eliminate any fringing effects in the final imagery that are related to sensor array offsets.

#### 2.3.2 Standards for Imagery

Reflights - Unacceptable coverage resulting from deviation from flight plans for imagery shall be corrected at the vendor's expense.

QA/QC for Aerial Photography, Airborne GPS- As soon as the aerial imagery has been captured, it must be inspected for cloud shadow, density, clarity, completeness, sidelap, endlap and crab. Successful capture of airborne GPS shall also be confirmed. A QC summary report shall be provided to Cambridge within one week of the date of photography capture.

### 2.3.3 Specifications and Standards for Photography Capture

Conditions- The contractor shall take vertical aerial photographs, free of clouds, cloud shadows, atmospheric haze and severe sun glare reflections. All photographs shall be taken with a minimum sun angle of 55 degrees during Spring 2010, under a cloudless sky, while deciduous vegetation is free of leaves, when streams are within their normal banks and when the ground is free of snow.

Spacing of Photographs - Overlapping images in each flight line shall provide full stereoscopic coverage of the area mapped. Endlap shall not be less than 75 percent nor more than 85 percent. Sidelap shall not be less than 45 percent, nor more than 55 percent.

Tilt - Tilt of the camera from the vertical plane at the instant of exposure shall not exceed 3 degrees, nor shall it exceed 5 degrees between successive exposure stations. Average tilt over the project shall not exceed 1 degree.

Flight Plan/Boundaries - The principal points of the first two and the last two exposures of each flightline shall fall a minimum of one full stereo-model beyond the boundary.

Notification of Flight – The City requests to be notified of the day and if possible the approximate time of flight as soon as that information becomes available.

Flight Height – The imagery must be of a scale to allow the mapping to meet, at a minimum, ASPRS Class 1 accuracy standards for 40-scale mapping products (incl. the optional 2' contours). Deviation from designed flight height for the project area shall not exceed 2 percent low or 5 percent high. The vendor should state and justify the specific image scale if they recommend/propose using a different scale.

Image Quality – All imagery shall be free from artifacts or imperfections due to the sensor system or subsequent handling.

### 2.4 Ground Control

It is required that the vendor develop a geodetic control network capable of creating American Society of Photogrammetry and Remote Sensing (ASPRS) Class 1 standards for 40-scale mapping. The ground control shall be managed and certified by a **Massachusetts registered land surveyor**.

The City will make existing geodetic control information from previous mapping projects will be made available for this project.

The procedures for establishing a ground control network should address:

1. Need to pre-target prior to the flyover or use of post-flight methods
2. Horizontal Control
3. Vertical Control
4. Tie-ins to existing NGS points
5. Use of existing control points (e.g. from the City's 2003 basemap project or other available surveys created as part of previous engineering projects)
6. Use of other existing control (e.g. Mass. Highway Dept., etc)
7. Survey methods, including use of field crews, GPS, and other techniques

The control network must be suitable for development of all specified products (planimetric, topography, digital orthophotography) at the specified accuracies. The City of Cambridge is amenable to alternative surveying technologies (e.g. IMU, etc.) that vendors feel may provide an appropriate and cost effective solution. The approach should be described in detail.

## **2.5 Fully Analytical Aerial Triangulation (FAAT)**

### **2.5.1 FAAT Technical Requirements**

Fully Analytical Aerotriangulation (FAAT) will be used to densify control. The Plan for Services should describe the expected positional accuracy of the horizontal and vertical control. A step-by-step discussion of the procedures and equipment used for the FAAT should be included in the Plan for Services. This discussion should also describe quality control procedures.

### **2.6 Tiling and Delivery Areas**

The vendor shall create a tile grid for use in paneling the .tif format orthophotographs. Although data will ultimately be delivered on a seamless, Citywide basis, the tile grid will be used to define the pilot delivery area, and form the extents of the orthophotography GeoTiff tiles. The tile grid shall be based on the Massachusetts Mainland State Plane Coordinate System (NAD83 feet).

#### **2.6.1 Draft Data Deliverables**

The draft pilot and the City-wide draft must be delivered as a series of seamless geodatabases covering the entire delivery area. In the past we have used three delivery areas, but it is up to the discretion of the vendor on what is appropriate for a delivery area. In order to streamline QAQC the orthophoto pilot, draft orthophotos will be delivered as a seamless MrSID format files. In addition, the pilot orthophoto tiles will be delivered as individual GeoTiff format files. Each delivery area data set must be edgematched to its adjacent delivery areas so that at the completion of the project the planimetric topographic and orthophoto MrSID data shall be integrated into a seamless project-wide data set.

#### **2.6.2 Final Data Deliverables**

Cambridge requires the final planimetric and topographic data to be delivered as 1 seamless file geodatabase. The orthophotography is to be delivered in individual Geotiff tile files plus a city-wide compressed MrSID file. To facilitate quality assurance/quality control processes, it is requested that vendors will propose to deliver initial deliverables on a delivery area basis so that QA/QC can proceed in some areas of the city while compilation is being completed in another. Vendors should propose an appropriate number of delivery areas as part of their proposal. The City anticipates a pilot project followed by two delivery areas.

### **2.7 Pilot Project for Orthophoto, Planimetric and Products**

In order to assure that the vendor can successfully create all required deliverables, a pilot project will precede the creation of any final deliveries. It is imperative that the pilot project be completed on-time, according to the winning vendor's schedule. This pilot will cover an area of at least four contiguous tiles. The pilot area will be selected by the City in consultation with the vendor. The pilot is intended to test all production methodologies and establish successful procedures to follow throughout the rest of the project, for example which annotation will be feature linked. While it is understood that ground control, aerial photography, and FAAT will likely be conducted for the entire City prior to the pilot, the rest of the project tasks that are contracted will be initially conducted only for these four contiguous map sheets during the pilot.

During the pilot, the contractor will also:

1. Finalize the database design for the geodatabase with any required minor modifications. A draft planimetric database design is included as Attachment A.
2. Finalize the delivery schedule based on the results of the pilot.
3. Determine optimum compression of seamless MrSID orthophotography deliverable based on testing of the pilot delivery.

The above tasks will be undertaken with the cooperation of City personnel. Upon successful completion of the pilot, the City will authorize full production of all orthophoto, planimetric and topographic products described in detail below.

## **2.8 True-Color Digital Orthophotography**

The City requires true-color orthophotography be created from the Spring 2010 flight. The orthophotography shall be comprised of .25' pixels. The accuracy shall be to project accuracy standard. It is expected that the digital images will be clear, carefully mosaicked, and have standardized color balance throughout the project area.

### **2.8.1 Methodology and Equipment**

The Plan for Services must concisely but thoroughly explain the methodology to be followed to develop the digital orthophotography, as well as list the equipment to be used. The following points must be covered in the Plan for Services:

1. Elevation model generation (use of DEM/DTM); the supplier will present the potential advantages or disadvantages of using the LiDAR-based DEM as an input to the orthophoto production process and optional contour generation
2. Breaklines and significant points
3. Image resolution
4. Image mosaicking
5. Radiometric verification
6. Image source and camera description (digital, negatives, diapositive, etc.)
7. Scanning equipment (if required)
7. Quality Assurance/Quality Control (QA/QC)
8. Data delivery formatting
9. The Team Member and staff performing the digital orthophotography

Due to the utility of orthophotos for conducting QA/QC on the planimetric data products, the City requires that the orthophotos be delivered before, or at the same time as all other products. The digital orthophotography should be delivered in color and have a pixel resolution of .25'. The final delivery format must be in both geo-tiff and MrSID formats, with delivery area paneling to be decided at the project kick-off meeting.

## **2.9 Color-Infrared Orthophotography**

The City requires Color-Infrared (CIR) delivery at the same precision and resolution as the True-Color orthophotography. It must also be delivered in the same formats and on the same schedule as the true-color imagery.

## **2.10 Photogrammetric Compilation**

Cambridge requires a robust set of planimetric features on which to develop its GIS database. Planimetric features will be compiled in digital format to meet the American Society of Photogrammetry and Remote Sensing (ASPRS) Class I standards for large scale maps at 40-scale. Each type of feature will be coded in conformance with the ESRI geodatabase design that will be finalized during the pilot project (see Attachment A for the draft database design). The design also specifies the digital feature type requirements (e.g. points, lines, polygons), as well as those features that are expected to have Z coordinates captured. Some planimetric features will only be mapped within the public properties and ways shown in Attachment D. These features are discussed in the draft database design.

### **2.11 Planimetric Features**

All mapping will be compiled using direct digital data capture on precision softcopy stereoplotters that utilize the relative and absolute orientation derived from the FAAT results.

Vendors are encouraged to provide relevant information on their experience with planimetric feature compilation and data layer formatting for ESRI geodatabases in their technical proposal.

#### **2.11.1 Capture Rates**

The vendor should estimate the capture rate for each feature type described in Attachment B and expect that the estimate will be considered binding upon completion of a contract with the City. Vendors are encouraged to provide a discussion of factors that influence capture rates that can be expected on this project. Capture rate estimates should be provided by filling out the capture rate form found in Attachment B.

#### **2.11.2 Attributes**

The City and the contractor will develop a final database design into which attributes will be placed, following the guidelines in Attachment A and based on the results of the pilot. This design will be reviewed and approved by the City as the standard for all data deliveries in the project. Any files that contain incorrectly coded data or data that does not adhere to the standard will be returned to the vendor for correction. The City will provide attribute and/or annotation source materials to the contractor where appropriate, e.g. hydrographic features.

#### **2.11.3 Edgematching**

All data files will be edgematched with data from adjoining files. No data elements will be repeated in two files. All coding of features will be consistent from one file to the next.

## **2.12 Interim Data Delivery**

### **2.12.1 Draft Data Deliverables**

Upon completion of the pilot and each draft delivery area, the vendor will submit 2 digital copies of all deliverables for review, one to the City and one to the City's designated project management/QAQC consultant. The draft data shall include areawide seamless ESRI geodatabases of the planimetric data and the raster orthophotography data in seamless MrSID format. The pilot draft deliverable of the orthophotography shall also include the individual uncompressed Geotiff tiles.

These data will be examined by the City and its contractors for conformance to the database design and quality and completeness specification. Any errors in the data will be noted in a report, and will be returned to the vendor for correction and resubmission to the City.

### **2.12.2 Final Data Deliverables**

When all delivery area data is approved by the City, the vendor will assemble the vector geodatabase data into a seamless data set and deliver the data to the City for checking and final acceptance. The MrSID format orthophotography will be produced as one seamless City-wide MrSID final deliverable, at the discretion of the City. All Geotiff format orthophotography tiles shall also be delivered at the conclusion of the project.

## **3 PROJECT MANAGEMENT AND MEETINGS**

The vendor will indicate in the Plan for Services who the main contact person – Project Manager - for the project will be. The City requires a minimum series of meetings with the Project manager and other key personnel, as follows:

1. Project kick-off and project planning meeting
2. Pilot review meeting
3. Any review meetings necessary to resolve any significant problems.

The Plan for Services shall include these meetings as milestones in the project schedule and timeline. In addition, the dates for all proposed “delivery area” data deliveries should be specified in the project schedule and timeline (see Section 7 below). If the vendor feels that more or less meetings are necessary, this should be indicated in the Plan for Services and justified.

Monthly progress reports shall be submitted to the City by the vendor’s project manager.

## **4 DELIVERABLES**

The following describes the required deliverables. All final digital data will be delivered on portable hard drive. All work products developed in fulfilling a contract let to perform these services or provide these deliverables will become the property of the City of Cambridge. The delivery media shall also become the property of the City.

### **4.1 Metadata**

All GIS data deliverables shall have Federal Geographic Data Committee (FGDC) compliant metadata in File Geodatabase and/or XML format readable within ArcCatalog.

### **4.2 Aerial Photography Deliverables**

1. Aerial Photography Report: As soon as the aerial photography has been completed, the products shall be inspected by the vendor and an aerial photography/Airborne GPS quality report issued to the City.
2. Geodatabase data of the actual flightlines and photo centers from the flight.

#### **4.3 Ground Control Deliverables**

It is expected that the results of the project ground control work will be delivered to the City as a Ground Control Report. This report shall include:

1. The ground control field notebook(s), including swing-tie sketches to all points.
2. A map showing the ground control station locations with numbers accurately referencing the appropriate features in the ground control field notebook.
3. Digital data layers in ESRI personal geodatabase format containing the ground control points along with pertinent attributes (e.g. X, Y and Z coordinates, type of point, etc.).

#### **4.4 FAAT Deliverables**

The contractor will submit an aerotriangulation report at the completion of the FAAT step.

#### **4.5 Digital Orthophotography Deliverable**

1. Digital data will be required for the final delivery of the digital real color orthophotography. Digital data should be delivered in both georeferenced .tiff format and seamless .SID compressed format. These data must be readable in ArcGIS.
2. Digital Elevation Model (DEM) data used to create the digital orthophotos will be delivered in both ASCII and ESRI geodatabase format.
3. Color Infrared orthophotography: This will require the same format as defined for the true-color deliverable in Section 4.5.
4. Tile Layout polygon geodatabase feature class.

#### **4.6 Planimetric and Topographic Data Deliverables**

1. Final seamless digital vector data shall be delivered in ESRI geodatabase format on a DVD or portable hard drive.

#### **4.7 Optional Deliverables**

1. Two-foot elevation contours; the supplier will describe its methodology for elevation contour extraction and correction from the LIDAR data or DTM
2. Vector-based geodatabase data set of all impervious surfaces merged into a simple yes/no classification

## 5 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The vendor should conduct quality assurance/quality control checks during all phases of the project. The Plan for Services should describe each of these checks, and which team member or staff person will be conducting the QA/QC. The proposal should be specific and not generalize the QA/QC "philosophy" of the firm.

## 6 ACCEPTANCE OF DELIVERABLES AND CAMBRIDGE QA/QC PROCEDURES

The City will subject interim and final deliverable products to a series of visual, digital, and data accuracy checks as described below. In general, products with missing data, gross errors, poor edgematch, incorrect attributes, and/or formatting errors will be returned to the vendor for correction.

### 6.1 Overview

All digital data must pass the following sequence of tests -- to be performed by the client, or client's consultant -- before they are accepted for payment. Acceptance tests are designed to provide criteria for judging whether the specifications contained in the RFP have been met. The following describes the QA/QC tests that may be applied to all project deliverables.

### 6.2 Review Procedures

The review process will be standardized and contain the following sequence of steps:

- A. Data is delivered by contractor
- B. QA/QC by City and its consultants commences
- C. Data is checked for completeness and readability within ArcGIS
- D. Data is digitally analyzed for conformity with database design
- E. Data is visually inspected within ArcGIS for data quality, accuracy and completeness
- F. City and its consultants perform any required fieldwork
- G. City and its consultants prepare a written QA/QC memo and provides this memo to the photogrammetry vendor. The memo details all errors, omissions and questions raised during the QA/QC review.
- H. Contractor provides a written response to the QA/QC memo that answers questions, outlines corrective actions and details expected redeliveries of data.
- I. City and contractor agree on proposed corrective actions.
- J. Contractor performs corrections and re-delivers data.

Open and honest communication between the contractor and the City are strongly encouraged throughout the QA/QC process

### 6.3 Planimetric Mapping Acceptance

Planimetric data QA/QC may include, but is not limited to the following tests:

#### 6.3.1 Planimetric Mapping Acceptance

- A. *Conformance with the Database Design*  
A set of tests will be run to ensure that planimetric data was built in accordance with the specifications agreed upon in the database design. These tests will check for correct:

Name of Bidder: \_\_\_\_\_

- Ability to read files in ArcGIS
- Projection
- Feature coding not in conformance to project standards
- Completion and validity of attribute data
- Strict adherence to the Database Design, including the TYPE value domain and item field definitions
- Ensuring layers with a NAME attribute are given the correct Name value

B. *General data quality issues*

- Ability to read files in ArcGIS
- Seamless integration between delivery groups
- Absence of slivers and other erroneous features
- Absence of pseudo nodes
- Line quality:
  - Absence of jagged appearance of smooth line features
  - Absence of extraneous vertices (particularly for straight lines)
  - Absence of dangles and overshoots
- Absence of extremely small polygon features (e.g. with an area of less than 1 foot) or extremely short arc features (e.g. with a length of less than 1 foot)
- Features with implausible shape, size or TYPE value
- Attribute values that are implausible or out of range
- Overlapping Features, such as vegetation polygons overlapping ponds
- Consistent handling of reoccurring situations, for example driveway, sidewalk and edge of pavement intersections.
- Complete capture of features

C. *Production of an "error report memo".*

- All errors and/or omissions will be noted in a memo delivered to the vendor. A memo will be prepared for each data delivery
- Errors and omissions will be noted in writing and reported to the vendor.

**6.4 Topographic Mapping Acceptance**

Topographic digital data must pass the following visual reviews -- to be performed by the client or client's consultant -- before they are accepted for payment. Final QA/QC by the client may include, but are not limited to the following tests:

**6.4.1 Topographic Digital Data Review**

A. Digital files shall be reviewed for:

- Ability to read files in ArcGIS
- Conformance with the database design
- Projection
- Seamless integration between delivery groups
- Completion and validity of attribute data
- Crossing contours
- Un-jagged/smooth line work
- Consistency with planimetric base map features (e.g. no contours overlapping into water bodies)
- Contours correctly coded for hidden and obscured attributes
- Consistent and proper coding of depression contours
- Contours dead-ends with no corresponding ground features (Retaining Walls, Buildings, etc.)
- Accurate and appropriate annotation of index contours
- Correct TYPE attributes of the SPOT Elevation
- Correct Elevation values including checking for zero values and contours outside of the elevation range for the community.

- B. Any errors found will be reported in a memo delivered to the vendor and the Town. The QA/QC vendor and the town should expect comments and corrections redelivered for another round of digital inspection.

### 6.5 Orthophoto Acceptance

Orthophoto digital data must pass the following visual reviews -- to be performed by the client or client's consultant -- before they are accepted for payment. Final QA/QC by the client may include, but are not limited to the following tests:

#### 6.5.1 Orthophotographic Digital Data Review

- A. Digital files shall be reviewed for:
- Ability to read files in ArcGIS
  - Projection
  - Seamless integration between delivery groups or tiles
  - Scratches or debris on the negatives
  - Warping of the image
  - Stretching of the ortho related to a bridges or other raised feature
  - Conformance with the DTM coverage
  - Consistency of tone and color across tiles and delivery areas
- B. Errors, omissions and conditions of non-conformance with the specifications shall be reported in writing to the vendor who will rectify problems and redeliver the data.

### 6.6 Fieldwork

Detailed fieldwork will be performed on an as-needed basis. This fieldwork may include simple spots checks for sample areas, or a comprehensive review of all tiles. The fieldwork will be conducted to check for spatial accuracy and completeness as well as to confirm the capture rates achieved during the photogrammetric processes.

#### A. Spatial Accuracy

A group of well-defined features may be randomly selected. An x, y coordinate pair will be acquired for each feature by either differential GPS methods or instrument survey based on a traverse commencing at a high accuracy control point. A z (elevation) value will also be measured if appropriate.

Acceptance under this test shall be granted if the photointerpreted location of each point meets the accuracy standards in place for the project (i.e. ASPRS), based on the high accuracy GPS survey.

#### B. Data Capture Completeness

Personnel shall compare all digital data submission to field observations of those same features. Capture rates will be calculated by comparing the number of features observed in the field to the number present in the digital data. In addition, the accuracy of attribute coding will be confirmed at this time (e.g. presence/absence of a street light on a utility pole).

## 7 ANTICIPATED SCHEDULE

The following table displays what the City considers to be a reasonable, potential schedule for this project. The vendor shall supply a detailed schedule in the form of a Gantt chart timeline supporting the schedule outlined in the table below as part of their Plan of Services.

Milestone	Desired Completion Date
Contract award, notice to proceed	March 10, 2010
Flyover completed	April 30, 2010
Pilot completed	July 20, 2010
Project complete	November 1, 2010

Name of Bidder: \_\_\_\_\_

**Quality Requirements**

A "No" response or a failure to respond to any of the following Quality Requirements will result in a rejection of your bid. Circle yes or no for each of the following Quality Requirements (1-6).

1. The Contractor, and any sub-contractors must have at least 5 years experience in producing and delivering high-accuracy photogrammetry on schedule and to the satisfaction of its clients. The proposed team must have worked together on at least 3 projects similar in size and scope to this project.

Yes                      No

2. The Contractor and any subcontractors must have successfully completed at least 5 equivalent planimetric, topographic and orthophotographic base mapping projects for cities, towns or similar areas based on digital aerial photography in the past 4 years. The planimetric and topographic data must have detailed planimetric photointerpretation and have been delivered in ESRI GeoDatabase format. The orthophotography must have been delivered in .tiff and JPG2000 or MrSID formats. These projects must have been at a project scale of 1":50' or larger. Not all projects must have all three base map components, but 5 of each type must be documented.

Yes                      No

3. The proposed Project Manager has successfully managed at least 5 equivalent planimetric, topographic and orthophotographic base mapping projects for cities, towns or similar areas based on digital aerial photography in the past 4 years.

Yes                      No

4. The Contractor and any subcontractors must have successfully completed at least 3 equivalent planimetric, topographic and orthophotographic base mapping projects for cities with a density of over 15,000 population per square mile using softcopy photogrammetric technology.

Yes                      No

5. Bidder can provide, upon request, proof of financial solvency.

Yes                      No

6. The submitted bid is without conditions, exceptions or modifications to the bid document.

Yes      or      No

**Bid Submission Requirements**

Please submit the following documentation with your bid. Failure to submit documents may result in the determination that your bid is non-responsive unless the City deems such failure to be a minor informality 1-7.

1. The bidder and any subcontractors shall submit a minimum of five references for five equivalent planimetric, topographic and orthophotographic base mapping projects for cities, towns or similar areas based on digital aerial photography in the past 4 years. The planimetric and topographic data must have detailed planimetric photointerpretation and have been delivered in ESRI GeoDatabase format. The orthophotography must have been delivered in .tiff and JPG2000 or MrSID formats. These projects must have been at a project scale of 1":50' or larger. Not all projects must have all three base map components. In addition, the City reserves the right to use itself as reference.

References should include the following information.

- **Project/Client Name**
- **Project Scale**
- **Contact Name**
- **Contact Phone Number**

2. The bidder shall submit 3 examples the Contractor and any subcontractors has successfully completed at least 3 equivalent planimetric, topographic and orthophotographic base mapping projects for cities in North America with a density of over 15,000 population per square mile and/or a total population of over 100,000 using softcopy photogrammetric technology.

3. The bidder shall submit information for the proposed Project Manager who has successfully managed at least 5 equivalent planimetric, topographic and orthophotographic base mapping projects for cities, towns or similar areas based on digital aerial photography in the past 4 years.

- **Project Managers name**
- **Project Managers contact information**
- **Resume for Project Manager**  
**The clients name and contact information for 5 projects managed by the Project Manager.**

4. The bidder shall submit a Plan for Services. The following is a listing of text that must be included in the Plan for Services.

- A. A concise but responsive description of methods and equipment to be used, including specifics requested later in this Invitation for Bid, for all tasks identified under the Description of Services, including a description of any proposed technical alternatives.
- B. List of Contractor's in-house equipment and other equipment that will be utilized for this project. The list should indicate clearly which equipment is owned and which is leased.
- C. A clear description of activities to be subcontracted, including the name and address of subcontractor.
- D. A work schedule and timeline with proposed major delivery milestones, including City responsibilities.
- E. Quality Assurance/Quality Control procedures.

**Bid submissions continued on next page**

Name of Bidder: \_\_\_\_\_

5. The bidder shall submit a Form for Expected Capture Rate of Planimetric Features (Attachment B)
6. The bidder shall submit Certifications for the Certified Photogrammetrist and Certified Land Surveyor
7. The bidder shall submit a description of any support needed from the City, other than availability of appropriate individuals to meet with the consultant(s) for coordination purposes.

**PRICE PROPOSAL**

One award will be made to the responsive and responsible bidder offering the lowest total price not including the Optional Services

***The City will not accept a bidder's terms and conditions. The submitted bid is without conditions, exceptions or modifications to the bid document***

<b>Aerial Photography, Ground Control FAAT</b>	\$ _____
<b>Planimetric mapping of all <i>required</i> features in Attachment A</b>	\$ _____
<b>4- Band Digital orthophotos at .25' pixel resolution</b>	\$ _____
<b>TOTAL</b>	\$ _____

**Total Bid in words:** \_\_\_\_\_

**Signature of bidder:** \_\_\_\_\_

**OPTIONAL SERVICES**

The City may consider the Optional Services as described Section 3. 7 ( Optional Deliverables) based on availability of funds. Do not include the optional service in the total price.

**Option 1- 1-2" contours and spot elevations including additional data work up**

\$ \_\_\_\_\_

**Option 2- Vector Impervious data set**

\$ \_\_\_\_\_

**Name of Bidder:** \_\_\_\_\_

**Americans with Disabilities Act (42 U.S.C. 12131)  
Section 504 of the Rehabilitation Act of 1973  
Tax Compliance/Anti-Collusion Statement**

The Americans with Disabilities Act (the "Act") applies to all employers of fifteen or more employees. All vendors that are subject to the Act must comply with its provisions. In further compliance with the Act, all Contractors who enter into contracts with the City are prohibited from discrimination against the City's employees, regardless of the size of the Contractor.

The Act protects against discrimination on the basis of "disability", which is defined as a physical or mental impairment that substantially limits at least one "major life activity"; discrimination against a person having a history or record of such impairment; and discrimination against an individual regarded - even if inaccurately - as having such an impairment. The Act also expressly prohibits discrimination that is based on an individual's relationship or association with a disabled person.

The bidder shall not discriminate against any qualified employee or job applicant with a disability and will make the activities, programs and services covered by any contract awarded through this procurement readily accessible to and usable by individuals with disabilities. To be qualified for a job, or to avail oneself of the bidder's services, the individual with the disability must meet the essential eligibility requirements for receipt of the bidder's services or participation in the bidder's programs or activities with or without: 1) reasonable modifications to the bidder's rules, policies and practices; 2) removal of architectural, communication, or transportation barriers; or, 3) provisions of auxiliary aids and services.

By submitting its bid, the bidder certifies to the City of Cambridge that it understands and will comply with all applicable provisions of the Act, including compliance with applicable provisions of Section 504 of the Rehabilitation Act of 1973, if the bidder is receiving federal funds.

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals

As required by M.G.L. c. 62C, §49A, the undersigned certifies under the penalties of perjury that the bidder has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

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

\_\_\_\_\_  
(Print Name of person signing bid)

\_\_\_\_\_  
(Signature & Title)

\_\_\_\_\_  
Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State

\_\_\_\_\_  
Zip Code

Name of Bidder: \_\_\_\_\_

**CORI COMPLIANCE FORM**

Persons and businesses supplying goods and/or services to the City of Cambridge ("Vendors"), who are required by law to perform CORI checks, are further required by Section 2.112.060 of the Cambridge Municipal Code to employ fair policies, practices and standards relating to the screening and identification of persons with criminal backgrounds through the CORI system. Such Vendors, when entering into contracts with the City of Cambridge, must affirm that their policies, practices and standards regarding CORI information are consistent with the policies, practices and standards employed by the City of Cambridge as set forth in the City of Cambridge CORI Policy ("CORI Policy") attached hereto.

**CERTIFICATION**

The undersigned certifies under penalties of perjury that the Vendor employs CORI related policies, practices and standards that are consistent with the provisions of the attached CORI Policy. **All Vendors must check one of the three lines below.**

1. \_\_\_\_\_ CORI checks are not performed on any Applicants.
2. \_\_\_\_\_ CORI checks are performed on some or all Applicants. The Vendor, by affixing a signature below, affirms under penalties of perjury that its CORI policies, practices and standards are consistent with the policies, practices and standards set forth in the attached CORI Policy.
3. \_\_\_\_\_ CORI checks are performed on some or all Applicants. The Vendor's CORI policies, practices and standards are not consistent with the attached CORI Policy. Please explain on a separate sheet of paper.

\_\_\_\_\_  
(Typed or printed name of person  
signing quotation, bid or Proposal)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
(Name of Business)

**NOTE:**

**The City Manager, in his sole discretion may grant a waiver to any Vendor on a contract by contract basis.**

**Instructions for Completing CORI Compliance Form:**

**A Vendor should not check Line 1 unless it performs NO CORI checks on ANY applicant. A Vendor who checks Line 2 certifies that the Vendor's CORI policy conforms to the policies, practices and standards set forth in the City's CORI Policy. A Vendor with a CORI policy that does NOT conform to the City's CORI Policy must check Line 3 and explain the reasons for its nonconformance in writing. Vendors, who check Line 3, will not be permitted to enter into contracts with the City, absent a waiver by the City Manager.**

**This form must be submitted with your bid**

Name of Bidder: \_\_\_\_\_

Chapter 2.121

LIVING WAGE ORDINANCE

Sections:

2.121.010	Title and Purpose
2.121.020	Definitions
2.121.030	Living Wage
2.121.040	Waivers and Exceptions
2.121.050	Notification Requirements
2.121.060	Duties of covered Employers
2.121.070	Community Advisory Board
2.121.080	Enforcement
2.121.090	Severability
2.121.100	Effective Date

**2.121.010 Title and Purpose.**

This Chapter shall be known as the "Cambridge Living Wage Ordinance". The purpose of this ordinance is to assure that employees of the City of Cambridge and employees of City contractors, subcontractors and beneficiaries of tax abatements, loans, grants, subsidies and other assistance provided by the City earn an hourly wage that is needed to support a family of four.

**2.121.020 Definitions.**

For the purposes of this ordinance, the term:

**(a) "Applicable Department"** means the Personnel Department for employees of the City of Cambridge, the Purchasing Department, with the advice and assistance of the appropriate department which receives the services, for Covered Employers who contract or subcontract with the City of Cambridge, the School Department for employees, contractors and subcontractors of the School Department, and the City Manager's Office for any other Person who is a Beneficiary of assistance other than a contract or subcontract.

**(b) "Assistance"** means:

(1) any grant, loan, tax incentive, bond financing, subsidy, or other form of assistance valued at least \$10,000 that an employer receives by or through the authority or approval of the City of Cambridge, including, but not limited to, c. 121A tax abatements, industrial development bonds, Community Development Block Grant (CDBG) loans and grants, Enterprise Zone designations awarded after the effective date of this Chapter, and the lease of city owned land or buildings below market value; and

(2) any service contract, as defined herein, of at least \$10,000 with the City of Cambridge that is made with an employer to provide services pursuant to G.L.c. 30B or other public procurement laws, awarded, renegotiated or renewed after the effective date of this Chapter.

(3) any service subcontract, as defined herein, of at least \$10,000.

**(c) "Beneficiary"** means:

(1) any person who is a recipient of Assistance;

(2) any company or person that is a tenant or sub-tenant, leaseholder or sub-leaseholder of a recipient of Assistance, provided that said company or person employs at least 25 persons and occupies property or uses equipment or property that is improved or developed as a result of Assistance, after the effective date of this Chapter; and

(d) **"Covered Employer"** means the City of Cambridge or a Beneficiary of Assistance.

(e) **"Covered Employee"** means:

(1) a person employed by the City of Cambridge except for persons in those positions listed in Section 2.121.040(j) of this ordinance; and

(2) a person employed by a Covered Employer, or a person employed by an independent contractor doing business with a Covered Employer, who would directly expend any of his or her time on the activities funded by the contract or the activities for which the Beneficiary received the Assistance, except for persons in those positions listed in Section 2.121.040(j) of this ordinance..

(f) **"Living Wage"** has the meaning stated in Section 2.121.030.

(g) **"Person"** means one or more of the following or their agents, employees, servants, representatives, and legal representatives: individuals, corporations, partnerships, joint ventures, associations, labor organizations, educational institutions, mutual companies, joint-stock companies, trusts, unincorporated organizations, trustees, trustees in bankruptcy, receivers, fiduciaries, and all other entities recognized at law by the Commonwealth of Massachusetts.

(h) **"Service Contract"** means a contract let to a contractor by the City of Cambridge for the furnishing of services, to or for the City, except contracts where services are incidental to the delivery of products, equipment or commodities. A contract for the purchase or lease of goods, products, equipment, supplies or other property is not a "service contract" for the purposes of this definition.

(i) **"Service Subcontract"** means a subcontract primarily for the furnishing of services, to or for a recipient of Assistance, except where services are incidental to the delivery of products, equipment or commodities. A contract for the purchase or lease of goods, products, equipment, supplies or other property is not a "service subcontract" for the purposes of this definition.

#### **2.121.030 Living Wage.**

(a) **Applicability.** Covered Employers shall pay no less than the Living Wage to their employees.

(b) **Amount of wage.** The Living Wage shall be calculated on an hourly basis and shall be no less than \$10.00, subject to adjustment as provided herein. The Living Wage shall be upwardly adjusted each year no later than March first in proportion to the increase at the immediately preceding December 31 over the year earlier level of the Annual Average Consumer Price Index for All Urban Consumers (CPI -U) Boston-Lawrence-Salem, MA - NH, as published by the Bureau of Labor Statistics, United States Department of Labor applied to \$10.00.

(c) **No reduction in collective bargaining wage rates.** Nothing in this Chapter shall be read to require or authorize any beneficiary to reduce wages set by a collective bargaining agreement.

(d) **Cuts in non-wage benefits prohibited.** No Beneficiary will fund wage increases required by this Chapter, or otherwise respond to the provisions of this Chapter, by reducing the health, insurance, pension, vacation, or other non-wage benefits of any of its employees.

#### **2.121.040 Waivers and Exceptions.**

(a) **Waivers.** A Covered Employer may request that the City Manager grant a partial or whole waiver to the requirements of this Chapter.

(b) **General Waivers.** Waivers may be granted where application of this Chapter to a particular form of Assistance is found by the City Solicitor to violate a specific state or federal statutory, regulatory or constitutional provision or provisions, and the City Manager approves the waiver on that basis.

**(c) Hardship Waivers for certain not-for-profit employers.** An employer, who has a contract with the City of Cambridge which is not subject to the provisions of G.L. c. 30B, may apply to the City Manager for a specific waiver where payment of the Living Wage by a not-for-profit Covered Employer would cause a substantial hardship to the Covered Employer.

**(d) Chapter 30B contract waivers.** Prior to issuing an invitation for bids for a procurement contract subject to the provisions of G.L. c. 30B, any Applicable Department may apply to the City Manager for a waiver of the application of the Living Wage to the contract where payment of the Living Wage by a Covered Employer would make it inordinately expensive for the City to contract for the services or would result in a significant loss of services, because the contracted work cannot be segregated from the other work of the Covered Employer.

**(e) General Waiver Request Contents.** All General Waiver requests shall include the following:

- (1) The nature of the Assistance to which this Chapter applies;
- (2) The specific or official name of the Assistance and Assistance program, the statutory or regulatory authority for the granting of the Assistance, and a copy of that authority;
- (3) The conflicting statutory, regulatory, or constitutional provision or provisions that makes compliance with this Chapter unlawful, and a copy of each such provision; and
- (4) A factual explication and legal analysis of how compliance with this Chapter would violate the cited provision or provisions, and the legal consequences that would attach if the violation were to occur.

**(f) Hardship Waiver Request Contents.** All Hardship Waiver requests shall include the following:

- (1) The nature of the Assistance to which this Chapter applies;
- (2) A detailed explanation of why payment of the Living Wage would cause a substantial hardship to the Covered Employer; and
- (3) A statement of proposed wages below the Living Wage.

**(g) Chapter 30B Contract Waiver Request Contents.** A Chapter 30B contract waiver request shall include the following:

- (1) The nature of the Assistance to which this Chapter applies;
- (2) A detailed explanation of why the contracted work cannot be segregated from the other work of the bidding Covered Employers thereby making the cost of the contract with the payment of the Living Wage inordinately expensive or would result in a significant loss of services;

**(h) Community Advisory Board review and recommendation regarding waiver requests.** The Community Advisory Board, as described in Section 2.121.070 of this ordinance, shall consider waiver requests along with their supporting documentation and analysis, and may hold a public hearing to consider the views of the public before making a recommendation to the City Manager regarding the waiver request. For a hardship waiver, the Community Advisory Board shall offer an opportunity to be heard to employees of the Covered Employer. After reviewing the recommendation of the Community Advisory Board, the City Manager may approve and grant or deny all or part of a request. The City Manager may in his or her discretion grant a temporary hardship waiver pending the hearing before the Community Advisory Board. For Chapter 30B contract waivers, the Community Advisory Board shall make its recommendation to the City Manager no more than thirty days after it is notified of the request for a Chapter 30B contract waiver.

**(i) Terms of exceptions.** If an employer is subject to this Chapter as a result of its receipt of more than one kind of Assistance covered by this Chapter, and if the City Manager grants a waiver with respect to one form of Assistance, the City Manager need not find that this Chapter is inapplicable to the employer with respect to another form of Assistance received by the employer.

**(j) Exceptions.** The following positions will be excepted from the requirement of the payment of the Living Wage upon certification in an affidavit in a form approved by the Applicable Department and signed by a principal officer of the Covered Employer that the positions are as follows:

- (1) youth hired pursuant to a city, state, or federally funded program which employs youth as defined by city, state, or federal guidelines, during the summer, or as part of a school to work program, or in other related seasonal or part-time program;

- (2) work-study or cooperative educational programs;
- (3) trainees who are given a stipend or wage as part of a job training program that provides the trainees with additional services, which may include, but are not limited to, room and board, case management, or job readiness services.
- (4) persons working in a recognized supported employment program that provides workers with additional services, which may include, but are not limited to, room and board, case management, counseling, or job coaching;
- (5) positions where housing is provided by the employer;
- (6) employees who are exempt from federal or state minimum wage requirements; and
- (7) individuals employed by the City of Cambridge where the employment of such individuals is intended primarily to provide a benefit or subsidy to such individuals, although the City is compensating them for work performed.

**2.121.050 Notification Requirements.**

All Applicable Departments shall provide in writing an explanation of the requirements of this ordinance in all requests for bids for service contracts and to all persons applying for Assistance as defined by this ordinance. All persons who have signed a service contract with the City of Cambridge or a contract for Assistance shall forward a copy of such requirements to any person submitting a bid for a subcontract on the Assistance contract.

**2.121.060 Duties of Covered Employers.**

**(a) Notification Requirements.** Covered employers shall provide each Covered employee with a fact sheet about this ordinance and shall post a notice about the ordinance in a conspicuous location visible to all employees. The fact sheet and poster shall be provided to the Covered Employer by the Applicable Department and shall include:

- (1) notice of the Living Wage amount;
- (2) a summary of the provisions of this ordinance;
- (3) a description of the enforcement provisions of the ordinance;
- (4) the name, address, and phone number of a person designated by the Applicable Department to whom complaints of noncompliance with this ordinance should be directed.

**(b) Contract for Assistance.** At the time of signing a contract for assistance with the City of Cambridge or with a Beneficiary, the contract must include the following:

- (1) the name of the program or project under which the contract or subcontract is being awarded;
- (2) a local contact name, address, and phone number for the Beneficiary;
- (3) a written commitment by the Beneficiary to pay all Covered Employees not less than the Living Wage as subject to adjustment under this ordinance and to comply with the provisions of this ordinance;
- (4) a list of Covered Employees under the contract with the employees' job titles;
- (5) a list of all subcontracts either awarded or that will be awarded to Beneficiaries with funds from the Assistance. Upon signing any subcontracts, the Covered Employer shall forward a copy of the subcontract to the Applicable Department.

**(c) Maintenance of payroll records.** Each Covered Employer shall maintain payrolls for all Covered Employees and basic records relating thereto and shall preserve them for a period of three years. The records shall contain the name and address of each employee, the job title and classification, the number of hours worked each day, the gross wages, deductions made, actual wages paid, and copies of social security wage and withholding reports, and evidence of payment thereof and such other data as may be required by the Applicable Department from time to time.

**(d) Applicable Department duties.** The Applicable Department shall cause investigations to be made as may be necessary to determine whether there has been compliance with this Ordinance. The Applicable Department shall report the findings of all such investigations to the Community Advisory Board.

**(e) Covered Employer to cooperate.** The Covered Employer shall submit payroll records on request to the Applicable Department. The Covered Employer shall permit City representatives to observe work being performed upon the work site, to interview employees and to examine the books and records relating to the payrolls being investigated to determine payment of wages.

**(f) City Assistance Reports.** Each Applicable Department shall file a City Assistance Report with the City Manager and the Community Advisory Board by July 31 of each year. The report shall include, for each Assistance package or contract approved during the preceding fiscal year:

- (1) the name of the Applicable Department (awarding agency), the name of the specific program under which the Assistance was awarded, and the origin of funds for Assistance;
- (2) a description of the purpose or project for which the Assistance was awarded;
- (3) the name, address, and phone number of a local contact person for the Covered Employer;
- (4) the total cost to the City of Assistance provided to each Beneficiary, including both face-value of Assistance, as well as revenue not collected as a result of the Assistance.

**2.121.070 Community Advisory Board.**

**(a) Purpose.** The purpose of the Community Advisory Board shall be to review the effectiveness of this Ordinance at creating and retaining Living Wage jobs, to make recommendations to the City Manager regarding the granting of Waivers to Covered Employers, to review the implementation and enforcement of this ordinance, and to make recommendations from time to time in connection therewith.

**(b) Composition.** The Community Advisory Board shall be composed of nine members and shall include representatives of labor unions, community organizations and the business community. All members will be appointed by the City Manager. Members of the Board shall serve a three-year term. Whenever a vacancy shall occur the City Manager shall appoint a replacement within thirty days of said vacancy.

**(c) Meetings.** The Community Advisory Board shall meet quarterly and in special session as required. All meetings of the Board shall be open to the public and will allow for public testimony on the uses of the City Assistance generally, and on specific instances of Assistance or proposed Assistance as received or sought by individual enterprises.

**(d) Conflict of Interest.** No member of the Community Advisory Board shall participate in any proceeding concerning a Beneficiary, a Covered Employer or a Covered Employee, or applicant for waiver or exemption, if the member or any member of his or her immediate family has a direct or indirect financial interest in the outcome of said proceeding.

**2.121.080 Enforcement.**

**(a) Enforcement powers.** In order to enforce this Chapter, the Applicable Department may, with the approval and assistance of the City Solicitor, issue subpoenas, compel the attendance and testimony of witnesses and production of books, papers, records, and documents relating to payroll records necessary for hearing, investigations, and proceedings. In case of failure to comply with a subpoena, the City may apply to a court of appropriate jurisdiction for an order requiring the attendance and testimony of witnesses and the productions of books, papers, records, and documents. Said court, in the case of a refusal to comply with any such subpoena, after notice to the person subpoenaed, and upon finding that the attendance or testimony of such witnesses or the production of such books, papers, records, and documents, as the case may be, is relevant or necessary for such hearings, investigation, or proceedings, may issue an order requiring the attendance or testimony of such witnesses or the production of such documents and any violation of the court's order may be punishable by the court as contempt thereof.

**(b) Complaint procedures.** An employee who believes that he or she is a Covered Employee or an applicant for a position to be filled by a Covered Employee who believes that his or her employer is not complying with requirements of this Chapter applicable to the employer may file a complaint with the Applicable Department or with the Community Advisory Board. Complaints of alleged violations may also be filed by concerned citizens or by the City Council. Complaints of alleged violations may be made at any

time, but in no event more than three years after the last date of alleged violation, and shall be investigated promptly by the Applicable Department. Statements written or oral, made by an employee, shall be treated as confidential and shall not be disclosed to the Covered Employer without the consent of the employee.

**(c) Investigations and hearings.** The Applicable Department shall investigate the complaint, and may, in conjunction with the City Solicitor, and in accordance with the powers herein granted, require the production by the employer of such evidence as required to determine compliance. Prior to ordering any penalty the applicable Department shall give notice to the employer and conduct a hearing. If at any time during these proceedings, the employer voluntarily makes restitution of the wages not paid to the employee making the complaint and to any similarly situated employees, by paying all back wages owed plus interest at the average prior year Massachusetts passbook savings bank rate, or otherwise remedies the violation alleged if the violation involves matters other than wages, then the Applicable Department shall thereafter dismiss the complaint against the employer.

**(d) Remedies.** In the event that the Applicable Department, after notice and hearing, determines that any Covered Employer has failed to pay the Living Wage rate or has otherwise violated the provisions of this Chapter, the Applicable Department may order any or all of the following penalties and relief:

(1) Fines up to the amount of \$300 for each Covered Employee for each day that the Covered Employer is in violation of this Ordinance, except if the violation was not knowing and willful, then the total fine shall not exceed the amount of back wages plus interest owed;

(2) Suspension of ongoing contract and subcontract payments;

(3) Ineligibility for future City Assistance for up to three years beginning when all penalties and restitution have been paid in full. In addition, all Covered Employers having any principal officers who were principal officers of a barred beneficiary shall be ineligible under this section; and

(4) Any other action deemed appropriate and within the discretion and authority of the city.

Remedies in this section shall also apply to the party or parties aiding and abetting in any violation of this chapter.

**(e) Private right of action.** Any Covered Employee, or any person who was formerly employed by a Beneficiary, may bring an action to enforce the provisions of this Chapter to recover back pay and benefits, attorneys fees and costs, by filing suit against a Beneficiary in any court of competent jurisdiction.

**(f) Remedies herein non-exclusive.** No remedy set forth in this Chapter is intended to be exclusive or a prerequisite for asserting a claim for relief to enforce the right granted under this Chapter in a court of law. This Chapter shall not be construed to limit an employee's right to bring a common law cause of action for wrongful termination.

**(g) Retaliation and discrimination barred.** A Covered Employer shall not discharge, reduce the compensation or otherwise retaliate against any employee for making a complaint to the City, otherwise asserting his or her rights under this Chapter, participating in any of its proceedings or using any civil remedies to enforce his or her rights under the Chapter. The City shall investigate allegations of retaliation or discrimination and shall, if found to be true, after notice and a hearing, order appropriate relief as set out in paragraphs (c) and (d) herein

#### **2.121.090 Severability.**

In the event any provision of this ordinance shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provisions hereof.

#### **2.121.100 Effective Date.**

This law shall be effective sixty (60) after final passage.  
The Living Wage Ordinance (2.121) provides, at 1.121.030(b) that the wage shall be upwardly adjusted each year no later than March 1<sup>st</sup> in proportion to the increase in the Annual Average Consumer Price Index for the prior calendar year for All Urban Consumers (CPI-U) in the Boston area, as published by the federal Bureau of Labor Statistics.

**File NO. 5141 Photogrammetry and GIS Base Map Development, Thursday, January 28, 2010  
@ 11:00 a.m.**

For calendar year 1999, the CPI-U increased by 2.5%. Therefore the new living wage, as of March 1, 2000 is \$10.25.

For calendar year 2000, the CPI-U increased by 4.3%. Therefore the new living wage, as of March 1, 2001 is \$ 10.68.

For calendar year 2001, the CPI-U increased by 4.3%. Therefore the new living wage, as of March 1, 2002 is \$11.11.

For calendar year 2002, the CPI-U increased by 2.6% . Therefore the new living wage, as of March 1, 2003 is \$11.37.

The City Council has voted to amend the section of the Living Wage Ordinance (1.121.030 (b) that provides the method for calculating cost of living increases each year. As a result of this change, the living wage as of March 30, 2003 is \$11.44.

For calendar year 2003, the CPI-U increased by 3.76%. Therefore the new living wage, as of March 1, 2004 is \$11.87.

For calendar year 2004, the CPI-U increased by 2.7%. Therefore the new living wage, as of March 1, 2005 is \$12.19.

For calendar year 2005, the CPI-U increased by 3.3%. Therefore the new living wage, as of March 1, 2006 is \$12.59.

For calendar year 2006 the CPI-U increased by 3.1 %. Therefore the new living wage, as of March 1, 2007 is \$12.98.

For calendar year 2007 the CPI-U increased by 1.9 %. Therefore the new living wage, as of March 1, 2008 is \$13.23.

For calendar year 2008 the CPI-U increased by 3.5 %. Therefore the new living wage, as of March 1, 2009 is \$13.69.

### City of Cambridge CORI Policy

1. Where Criminal Offender Record Information (CORI) checks are part of a general background check for employment or volunteer work, the following practices and procedures will generally be followed.
2. CORI checks will only be conducted as authorized by Criminal History Systems Board (CHSB). All applicants will be notified that a CORI check will be conducted. If requested, the applicant will be provided with a copy of the CORI policy.
3. An informed review of a criminal record requires adequate training. Accordingly, all personnel authorized to review CORI in the decision-making process will be thoroughly familiar with the educational materials made available by the CHSB.
4. Prior to initiating a CORI check, the City will review the qualifications of the applicant to determine if the applicant is otherwise qualified for the relevant position. The City will not conduct a CORI check on an applicant that is not otherwise qualified for the relevant position.
5. Unless otherwise provided by law, a criminal record will not automatically disqualify an applicant. Rather, determination of suitability based on CORI checks will be made consistent with this policy and any applicable law or regulations.
6. If a criminal record is received from CHSB, the authorized individual will closely compare the record provided by CHSB with the information on the CORI request form and any other identifying information provided by the applicant, to ensure the record relates to the applicant.
7. If, in receiving a CORI report, the City receives information it is not authorized to receive (e.g. cases with dispositions such as not guilty or dismissal, in circumstances where the City is only authorized to receive convictions or case-pending information), the City will inform the applicant and provide the applicant with a copy of the report and a copy of CHSB's *Information Concerning the Process in Correcting a Criminal Record* so that the applicant may pursue correction with the CHSB.
8. If the City of Cambridge is planning to make an adverse decision based on the results of the CORI check, the applicant will be notified immediately. The applicant shall be provided with a copy of the criminal record and the City's CORI policy, advised of the part(s) of the record that make the individual unsuitable for the position and given an opportunity to dispute the accuracy and relevance of the CORI record.
9. Applicants challenging the accuracy of the criminal record shall be provided a copy of CHSB's *Information Concerning the Process in Correcting a Criminal Record*. If the CORI record provided does not exactly match the identification information provided by the applicant, the City of Cambridge will make a determination based on a comparison of the CORI record and documents provided by the applicant. The City of Cambridge may contact CHSB and request a detailed search consistent with CHSB policy.
10. If the City of Cambridge reasonably believes the record belongs to the applicant and is accurate, then the determination of suitability for the position will be made. Unless otherwise provided by law, factors considered in determining suitability may include, but not be limited to the following:
  - (a) Relevance of the crime to the position sought;
  - (b) The nature of the work to be performed;
  - (c) Time since the conviction;
  - (d) Age of the candidate at the time of offense;

- (e) Seriousness and specific circumstances of the offense;
  - (f) The number of offenses;
  - (g) Whether the applicant has pending charges;
  - (h) Any relevant evidence of rehabilitation or lack thereof;
  - (i) Any other relevant information, including information submitted by the candidate or requested by the City.
11. The Personnel Department will assist affected departments, in assessing the suitability of candidates in accordance with paragraph 10 a through i above, to ensure consistency, fairness, and protection of employment opportunities and the public interest.
  12. The City of Cambridge will notify the applicant of the decision and the basis of the decision in a timely manner.
  13. CORI information shall not be disseminated or shared with any unauthorized employees or other, but shall be maintained in confidence consistent with the obligations of law.

Revised May 5, 2007

**ATTACHMENT A**  
**CAMBRIDGE, MA**  
**Geodatabase Specification for GIS Planimetric and Topographic Data**

Jan. 12, 2010

LAYER	REQUIRED FEATURES		BASIC PLANIMETRICS				Notes	
	Feature Class	Feature Class Description	Feature Types (required topology)	Attribute Name(s) & Definition	Attribute Value Domain	Attribute Value Description		
1	ROAD	Edge of Pavement	Poly	TYPE	RD-PAVED	Paved road	Will supply current layer for reference	
			Text 50	RD-UNPAVED	Unpaved road			
				RD-BRIDGE	Bridge decking and structure			
				RD-TRAF-ISLAND	Traffic Island			
				RD-ALLEY	Alley			
2	CURB	Curbs	Line	TYPE	CURB	Hard curb structure	should be coincident with edge of pavement/sidewalk where appropriate	
			Text 50					
3	SIDEWALK-PUBLIC	Sidewalks	Poly	TYPE	SW-CONCRETE	Public concrete sidewalk	these break @ driveways, parking lots, etc. Must break for public ways and rails	
			Text 50	SW-BITUMINOUS	Public bituminous sidewalk			
				SW-BRICK	Public brick sidewalk			
				SW-GRAVEL	Public gravel sidewalk			
				SW-OPWALK	Other public sidewalk			
				SW-BRIDGE	Pedestrian Bridge			
				TREE-WELL	Tree Well for trees and plantings			
4	SIDEWALK-PVT	Private Sidewalks and Ramps	Poly	SW-PRIVATE	Private walk (e.g. sidewalk to door)	Attribute designating if there is a tree in the well or it is empty		
				SW-RMP-WOOD	Wooden Ramp			
				SW-RMP-CONC	Concrete Ramp			
5	SWALK-CL	Sidewalk Centerline	Line	TYPE	SIDEWALK	Public sidewalk centerlines	continuous thru driveways, parking lots, etc. For pedestrian routing	
			Text 50	CWALK-CL	Crosswalk Centerlines			
6	IMPERV-OTHER	Other Impervious	Poly	TYPE	PATIO	Patio	Usually found near traffic signals	
			Text 50	TRANSFRM-PAD	Pad Mounted Transformer			
				TRANS-PAD	Transmission Tower Pad			
				ELECTRIC-BOX	Electric Box for traffic signals			
				PAD-CONC	Concrete Pad			
				PLAZA	Plaza			
7	BUILDINGS	Structures foot/rooftprints	Poly	TYPE	BLDG	Building	Minimum size 64 sq. ft. Minimum size 64 sq. ft.	
			Text 50	OUTBLDG	Outbuilding (shed, detached garage etc.)			
			Z	MOBILE	Mobile home, trailer			
			Z	FOUNDATION	Building foundation			
			Z	RUINS	Ruined building			
			Z	CONSTRUCT	Under Construction			
			Z	OVHD-WALKWAY	Overhead Walkway Joining Structures			
				BASE-ELEV	Elevation of structure (NAVD88)	for structures requiring "Z" one decimal place		
				Double	ELEV-SL	Elevation of roofline edge above sea level (NAVD88)		one decimal place
				Double	TOP-SL	Elevation of highest point above sea level (NAVD88)		one decimal place
	Double	ELEV-GL	Elevation of roofline edge above ground level (NAVD88)	one decimal place				
	Double	TOP-GL	Elevation of highest point above ground level (NAVD88)	one decimal place				

ATTACHMENT A  
CAMBRIDGE, MA  
Geodatabase Specification for GIS Planimetric and Topographic Data

Jan. 12, 2010

Feature Class	Feature Class Description	Feature Types (required topology)	Attribute Column Name(s) & Definition	Attribute Domain	Attribute Value Description	Notes
8	STRUCTURES	Poly	WATERTANK	Water storage tank		
			FUELTANK	Fuel storage tank		
			MISCTANK	Miscellaneous tank		
			SMOKESTACK	Smokestacks		
			PORCH	Porch	Porches, decks, and stairs should be snapped to building or other features when appropriate	
			DECK	Deck	more than 3 stairs	
			STAIRS	Flight of Stairs		
			POOL-IN	Swimming pool inground		
			POOL-AB	Swimming pool above ground		
			BUS_SHELTER	Bus Shelter		
9	DRIVEWAY	Poly	DRIVE-PAV	Driveway Paved		
			DRIVE-UNP	Driveway Unpaved		
			PRKNG-PAV	Paved parking area		
			PRKNG-UNP	Unpaved parking area		
			POND	Pond polygon		
			STREAM	Stream polygon		
			WETAREA	Wetland polygon		
			FWETAREA	Forested Wetland polygon		
			WATER	River that appears as poly		
			RETENT	Retention pond / Flood basin		
10	PARKING	Poly	PRKNG-PAV	Paved parking area		
			PRKNG-UNP	Unpaved parking area		
			NAME	Pond name		
			NAME	The name of pond/lake feature		
			CONNECTOR	Invisible but intilled hydro connection		
			CULVERT	Sewer or drain crossing under surface		
			OPENCHANNEL	Uncovered ditch, channel, or swale		
			NAME	The name of stream/river features		
			NAME	Stream name		
			NAME	The name of stream/river features		
11	HYDRO-POLY	Poly	WETAREA	Wetland polygon		
			FWETAREA	Forested Wetland polygon		
			WATER	River that appears as poly		
			RETENT	Retention pond / Flood basin		
			NAME	Pond name		
			NAME	The name of pond/lake feature		
			CONNECTOR	Invisible but intilled hydro connection		
			CULVERT	Sewer or drain crossing under surface		
			OPENCHANNEL	Uncovered ditch, channel, or swale		
			NAME	The name of stream/river features		
12	HYDRO-LINE	Line	CONNECTOR	Invisible but intilled hydro connection		
			CULVERT	Sewer or drain crossing under surface		
			OPENCHANNEL	Uncovered ditch, channel, or swale		
			NAME	The name of stream/river features		
			NAME	Stream name		
			NAME	The name of stream/river features		
			CONNECTOR	Invisible but intilled hydro connection		
			CULVERT	Sewer or drain crossing under surface		
			OPENCHANNEL	Uncovered ditch, channel, or swale		
			NAME	The name of stream/river features		
13	INFRA	Point	CB	Catch basin (storm drain)		
			HYD	Fire hydrant		
			MH	Generic manhole		
			NAME	The name of stream/river features		
			NAME	Stream name		
			NAME	The name of stream/river features		
			CONNECTOR	Invisible but intilled hydro connection		
			CULVERT	Sewer or drain crossing under surface		
			OPENCHANNEL	Uncovered ditch, channel, or swale		
			NAME	The name of stream/river features		

ATTACHMENT A  
CAMBRIDGE, MA  
Geodatabase Specification for GIS Planimetric and Topographic Data

Jan. 12, 2010

Feature Class	Feature Class Description	Feature Types (required topology)	Attribute Column Name(s) & Definition	Attribute Value Domain	Attribute Value Description	Notes
		Z	POLE-LT	Utility poles with street light	Features only to be captured within city public ways and properties. Refer to Attachment D.	
		Z	LIGHT	Light Pole	Features only to be captured within city public ways and properties. Refer to Attachment D.	
		Z	TRAFFIC-SIGNAL	Traffic Signal Pole		
		Z	TRAFFIC-WALK-SIGNAL	Traffic Walk Signal Pole		
			STAND-FIREBOX	Firebox Stand		
			UNKNOWN	Unknown		
			PEDESTRIAN-RAMP	Handicap Pedestrian Ramp	Features only to be captured within city public ways and properties. Refer to Attachment D.	
			BIKE-RACK	Bike racks	Single pole and clustered bike racks Features only to be captured within city public ways and properties. Refer to Attachment D.	
			TRASH-RECEP	Trash receptacle		
			ELEV	Elevation value	Elevation of features with Z values above ground level two decimal places	
			Double			
14	INFRA-LINE	Line	TRAFFIC-POLE-ARM	Traffic Signal Arm to pole		
			BILLBOARD	Billboard		
			PARK-BENCH	Street and Park Bench	Features only to be captured within city public ways and properties. Refer to Attachment D.	
15	RAIL	Line	RAIL-ACTIVE	Active rail road		
		Z	RAIL-ACTIVE-ELEV	Active elevated rail road	Centerline of rails	
			RAIL-ABANDON	Abandoned rail road		
			RAIL-BRIDGE	Railroad bridge	the rail line is elevated on a bridge	
16	FENCE	Line	FENCE	Fence		
			HEDGE	Hedges used as a boundary	Fences and property boundary hedges	
			GUARDRAIL	Guardrail along road		
17	WALL	Line	WALL	Wall		
			RETWALL	Retaining wall	2 min height	
			STONEWALL	Stone Wall (not retaining)		
			SITTINGWALL	Sitting Wall	Urban plaza structures	
			PLAZA-STRUCT	Urban Plaza Structure	Like big planters in urban plazas	
18	TRAIL	Poly	TRAIL-PAVED	Trails > 3 ft. width paved foot/bike path		
			TRAIL-UNPAVED	Trails > 3 ft. width unpaved foot/bike path	Unpaved trails/footpaths greater than 3 ft. width depicted	
19	TREES	Point	STREET-TREES	Public Street Tree		
			PARK-TREES	Park Tree	Have reference file of existing trees	
			CELL	Cell phone towers	Features only to be captured within city public ways and properties. Refer to Attachment D.	
20	MISC-PT	Point	CELL	Cell phone towers		
			TYPE	Text 50		
21	SPORT	Poly	FIELD	Athletic fields (baseball, football, etc.)		
			GOLF	Golf courses		
			TENNIS	Tennis courts		
			BASKETBALL	Basketball courts		
			PLAYGROUND	Playground		
22	CEMETERY	Poly	CEMETERY	Cemetery		
			TYPE	Text 50		

ATTACHMENT A  
CAMBRIDGE, MA  
GeoDatabase Specification for GIS Planimetric and Topographic Data

Jan. 12, 2010

Feature Class	Feature Class Description	Feature Types (required topology)	Attribute Column Name(s) & Definition	Attribute Value Domain	Attribute Value Description	Notes
			NAME Text, 50	Cemetery Name	The cemetery name	City will provide name information
23	DOCK	Poly	TYPE Text, 50	DOCK PIER	Floating marine structure Fixed marine structure	Docks are floating structures; piers a permanent struds above the water, often on piles.
24	HEADSTONE	Point	TYPE Text, 50	HEADSTONE MONUMENT MARKER	Headstone Monument Marker	Headstone larger monument small marker flush with ground
25	PAVE-MARK	Line	TYPE Text, 50	PM-CROSSWALK PM-RAISE-CW PM-PARKING PM-DIRECTIONAL PM-LANEMARKER PM-TEXT PM-PARKING-OS PM-RAIL PM-RAMP PM-YIELD PM-BIKE	Crosswalk marking Raised crosswalks Parking space delineator Turning arrow, etc. In traffic lanes Lane marker Words in roadway Parking space delineator off street (parking lots) Railroad markings Raised device ramp triangles Yield markings Bike lanes and symbols	Outline if line width > 6" 3 types, bars, zebra, and ladder. Outline if line width > 6" Outline if line width > 6" Outline if line width > 6" Such as "SLOW", "STOP", "SCHOOL", etc. Outline if line width > 6" Outline if line width > 6"
26	UNDCONST	Poly	TYPE Text, 50	UC-AREA	Area Under Construction	
27	SPOT-ELEV	Point	TYPE Text, 50	SPOT-RD-INT SPOT-WATER SPOT-HILL SPOT-OTHER ELEV Double	Elevation of the road intersection Elevation of Stationary water body Elevation of hilltop Elevation of other spot Spot Elev. value	Spot elevations will be captured at all street intersection locations, water bodies, hilltops, and in other key points. two decimal places
28	CONTROL	Point	TYPE Text, 50	HPT VPT HVPT FAATPP MHD USGS OTHER Spike CEMENT OTHER NONE VISIBLE Text, 50 X Double Y Double Z Double	Newly created horizontal point Newly created vertical point Newly created horiz. and vert. point FAAT point from stereomodel Mass. Highway Dept. point used USGS point used Other existing monument pt. A spike marks the point Cement object marks the point Other object marks the point There is not a marker for point Point is visible on photograph Point is NOT visible on photograph Value of the X coordinate Value of the Y coordinate Value of the Z coordinate	A point feature class of all ground control used during FAAT creation should be delivered with attributes for the explicit coordinate values as well as for the type of ground control point, any material used to permanently mark the monument points and a description of whether the point was marked so that it was visible during the fly-over. It is understood that FAAT points will not have markers and will be coded as NONE

**ATTACHMENT A**  
**CAMBRIDGE, MA**  
**Geodatabase Specification for GIS Planimetric and Topographic Data**

Jan. 12, 2010

Feature Class	Feature Class Description	Feature Types (required topology)	Attribute Column Name(s) & Definition	Attribute Value Domain	Attribute Value Description	Notes	
29	DTM-POINT	Digital terrain model points	Point	Z Text 50 ELEV Double	DTM Elevation value	DTM masspoint Elevation of the DTM point	two decimal places
30	DTM-BREAKLINE	Digital terrain model breaklines	Line	Z Text 50 ELEV Double	BREAK-LIN Elevation value	Breaklines Elevation of breakline	two decimal places
31	ORTHO=GRID	Ortho imagery boundaries	Poly	TILE Text 50	Title Identification	The ortho imagery tile identification information	
32	ORTHO=SEAMLIN	Ortho seam lines	Line				edges where photos are merged to create the orthophoto

<b>1</b>	<b>CONTOUR</b>	Contour lines	Line	<b>Z</b>	<b>ELEV</b> Double	Elevation value	Elevation of the contour line	Contours are created with appropriate reference from retaining walls and other break lines. Contour lines are not broken for annotation placement.
					<b>TYPE</b> Text, 50	INTV	1' or 2' contour line	
						INTH	contour lines that are hidden	
						INTV-DEP	depression contour line	
						INTH-DEP	inter-dep-hid	
						INTV-OBS	inter-obs	
						INTH-OBS	inter-obs-hid	
						INTV-DEP-OBS	inter-dep-obs	
						INTH-DEP-OBS	inter-dep-obs-hid	
						INDV	index	
						INDH	index-hid	
						INDV-DEP	index-dep	
						INDH-DEP	index-dep-hid	
						INDV-OBS	index-obs	
						INDH-OBS	index-obs-hid	
						INDV-DEP-OBS	index-dep-obs	
						INDH-DEP-OBS	index-dep-obs-hid	

	IMPERVIOUS	Impervious Areas	Poly	TYPE	IM-PAVED-SURF	Paved Surface
1				Text, 50	IM-STRUCTURE	Impervious Structure
					IM-SURFACE	Impervious Surface
					IM-OTHER	Other Impervious

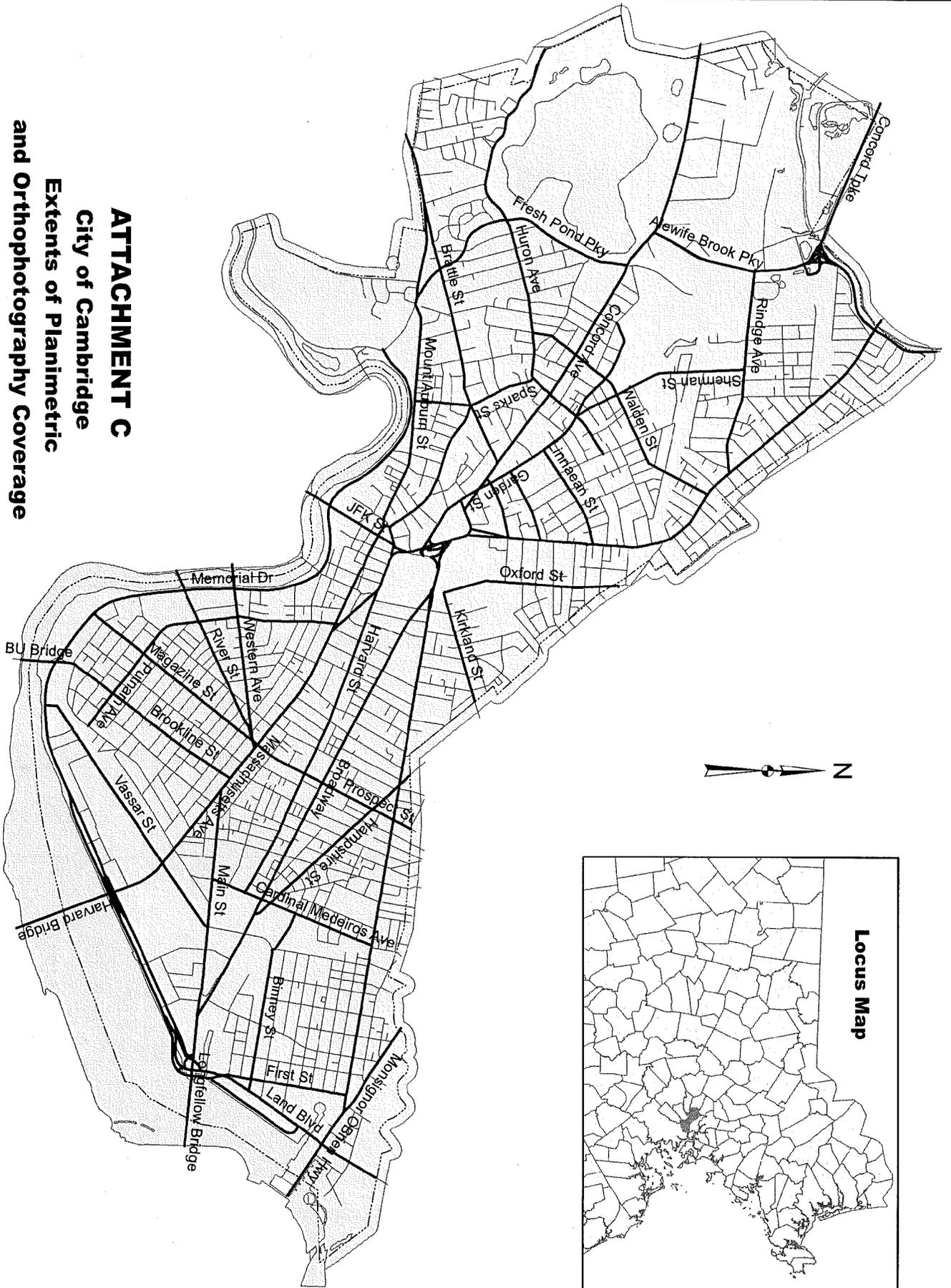
**Attachment B - Feature Capture Rate Form Instructions**

The form on the following page asks the vendor to estimate the overall capture rate for each planimetric feature type based on photogrammetric interpretation. For major features such as buildings and driveways it is assumed that capture rates of near 100% are possible. For smaller features such as hydrants or catchbasins the estimated capture rate is extremely important since it will dictate the amount of future fieldwork the City may need to fully map those systems. The City is requesting the overall capture rate information so that the City has an objective standard to apply when performing QA/QC.

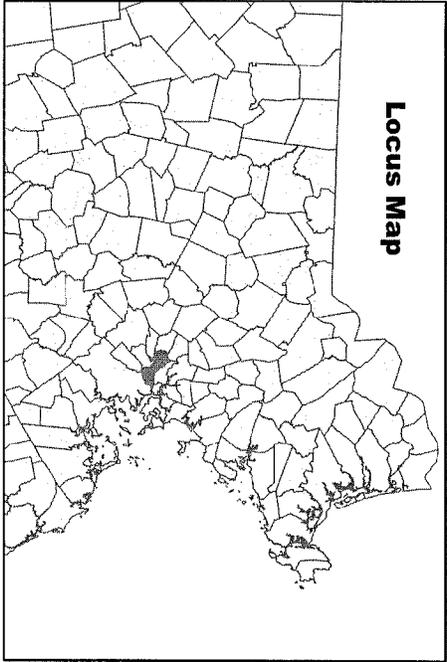
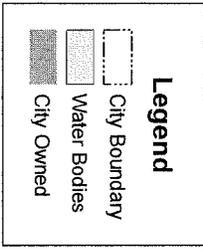
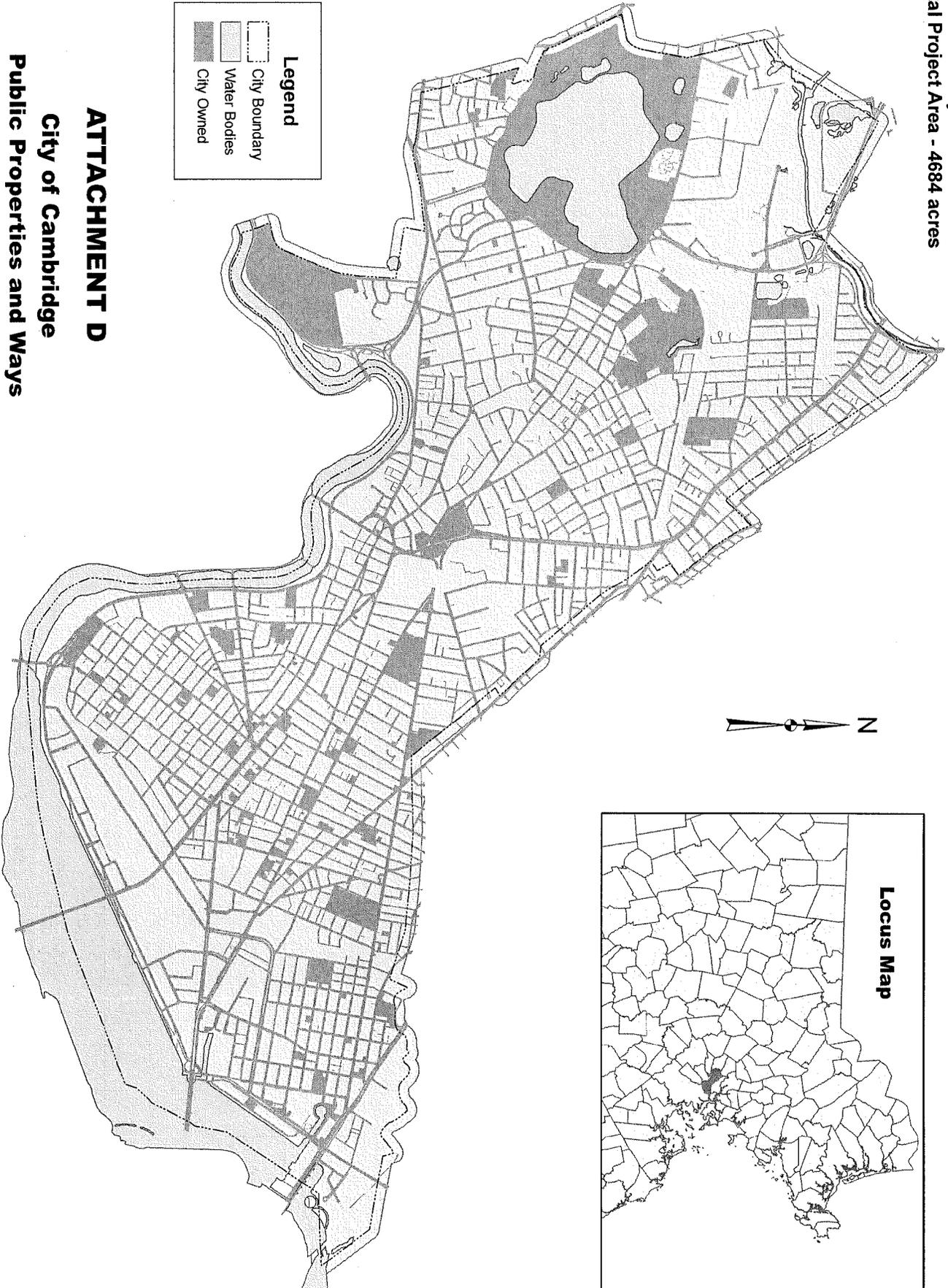
Upon contract award, it is expected that the capture rates in this form will be binding. The City will reserve the right to perform QA/QC that verifies that the estimated capture rates are being met. It is assumed that the capture rate presented will be the **overall feature capture rate** (as opposed to the "photo-visible feature capture rate"). The overall capture rate will be calculated by counting the number of features that are observed in the field and comparing that to the number of features provided by the vendor in the digital data. This definition of capture rates is final, and cannot be superceded by any language, caveats or footnotes elsewhere in the proposal. Features that are "invisible" (e.g. are buried, paved-over, etc.) will not be considered when calculating the overall feature capture rate. The vendors should consider the typical photography and field condition flaws (e.g. parked cars) that can influence capture rates when making their estimates.

<b>FEATURE DESCRIPTION</b>	<b>40-scale Capture Rate</b>
Edge of Paved Street (attribute for curbing)	%
Sidewalk (coded for sidewalk type, paved, brick, concrete)	%
Building Foot/Roofprints (all visible buildings, tanks, mobile homes, foundations, etc.)	%
Building Porches, Decks, and Patios	%
Streams, Rivers, Creeks	%
Drainage Ditches	%
Headwalls/ Floodwalls	%
Culverts	%
Retaining Wall	%
Fences & Hedges	%
Driveways (paved vs. unpaved attribute)	%
Parking Lot (greater than 4 spaces, paved vs. unpaved attribute)	%
Swimming Pools	%
Street Trees (trees adjacent to public ways)	%
Pavement markings	%
Private walks (from sidewalk to front/rear doors)	%
Cemetery Headstone	%
Cemetery Marker	%
Fire Hydrants	%
Catchbasins	%
Utility Poles and Street Lights	%

**ATTACHMENT C**  
**City of Cambridge**  
**Extents of Planimetric**  
**and Orthophotography Coverage**



City Owned Properties - 591 acres  
Roads and Ways - 878 acres  
Total Project Area - 4684 acres



**ATTACHMENT D**  
**City of Cambridge**  
**Public Properties and Ways**

**City Of Cambridge  
Articles Of Agreement**

**Commodity:**  
**File Number:**

This agreement is made and entered into this \_\_\_\_\_, by and between the **City Of Cambridge** ("the CITY"), a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, and \_\_\_\_\_, existing under the laws of the State of \_\_\_\_\_ ("the Contractor").

**Address:**

**Telephone, Fax, E-mail:**

**Article I. Definition.** "This Contract" as used herein shall mean these Articles of Agreement and "the bid documents," which include, but are not limited to, the instructions to bidders, the Contractor's bid or proposal, the specifications, the general conditions, the requirements, the applicable addenda, and all documents and forms submitted with the Contractor's bid or proposal that were accepted by the City.

**Article II. Duration.** The Contractor shall commence the performance of this contract for the period beginning on \_\_\_\_\_ and ending on \_\_\_\_\_.

**Article III. Terms.** The Contractor agrees to provide the services all in accordance with the bid documents of (bid opening date) or (proposal if appropriate).

**Contract Value:**

**Article IV. Payment.** The City agrees to pay to Contractor the sum set forth in the Contractor's bid or proposal. Contractor shall invoice department to which it provided the service, not the Purchasing Department.

**Article V. Termination.** The following shall constitute events of default under this Contract requiring immediate termination: a) any material misrepresentation made by the Contractor, b) any failure by the Contractor to perform any of its obligations under this Contract including, but not limited to, the following: (i) failure to commence performance of this Contract at the time specified in this Contract due to a reason or circumstance within the Contractor's reasonable control, (ii) failure to perform this Contract with sufficient personnel and equipment or with sufficient material to ensure the completion of this Contract within the specified time due to a reason or circumstance within the Contractor's reasonable control, (iii) failure to perform this Contract in a manner reasonably satisfactory to the City, (iv) failure to promptly re-perform within reasonable time the services that were rejected by the City as erroneous or unsatisfactory, (v) discontinuance of the services for reasons not beyond the Contractor's reasonable control, (vi) failure to comply with a material term of this Contract, including, but not limited to, the provision of insurance and nondiscrimination, and (vii) any other acts specifically and expressly stated in this Contract as constituting a basis for termination of this Contract.

Except as otherwise provided in the Articles of Agreement, the City may terminate the contract upon seven days notice.

**Article VI. Damages.** From any sums due to the Contractor for services, the City may keep for its own the whole or any part of the amount for expenses, losses and damages as directed by the Purchasing Agent, incurred by the City as a consequence of procuring services as a result of any failure, omission or mistake of the Contractor in providing services as provided in this Contract.

**Article VII. Conflict.** In the event there is a conflict between these Articles and the bid documents, the bid

**Name of Bidder:** \_\_\_\_\_

documents shall supersede these articles.

**Article VIII. Governing laws and ordinances.** This Contract is made subject to all the laws of the Commonwealth and the Ordinances of the City and if any such clause thereof does not conform to such laws or ordinances, such clause shall be void (the remainder of the Contract shall not be affected) and the laws or ordinances shall be operative in lieu thereof.

**Article IX. Performance Security.** Upon execution of this Contract by the Contractor, the Contractor shall furnish to the City security for the faithful performance of this Contract in the amount of   0%   of the value of the bid in the form of a performance bond issued by a surety satisfactory to the city or in the form of a certified check.

**Article X. Equal Opportunity.** the Contractor in the performance of all work under this contract will not discriminate on the grounds of race, color, sex, age, religious creed, disability, national origin or ancestry, sexual orientation, marital status, family status, military status, or source of income in the employment practices or in the selection or retention of subcontractors, and in the procurement of materials and rental of equipment. The city may cancel, terminate or suspend the contract in whole or in part for any violation of this article.

**Article XI. Assignability.** the Contractor shall not assign, sell, subcontract or transfer any interest in this contract without prior written consent of the city.

In witness whereof the parties have hereto and to three other identical instruments set their hands the day and year first above written.

**Approved as to Form:**

**The Contractor:**

\_\_\_\_\_  
**Donald A Drisdell**  
**City Solicitor**

\_\_\_\_\_  
**Signature And Title**

\_\_\_\_\_  
**Robert W. Healy**  
**City Manager**

\_\_\_\_\_  
**Cynthia H. Griffin**  
**Purchasing Agent**

Name of Bidder: \_\_\_\_\_