

**SERIAL 15056 RFP IMAGERY SERVICES**

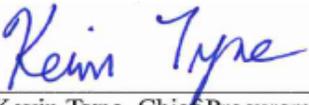
**DATE OF LAST REVISION: August 18, 2016 CONTRACT END DATE: October 31, 2017**

**CONTRACT PERIOD THROUGH OCTOBER 31, ~~2016~~ 2017**

TO: All Departments  
FROM: Office of Procurement Services  
SUBJECT: Contract for **IMAGERY SERVICES**

Attached to this letter is published an effective purchasing contract for products and/or services to be supplied to Maricopa County activities as awarded by Maricopa County on **October 21, 2015**.

All purchases of products and/or services listed on the attached pages of this letter are to be obtained from the vendor holding the contract. Individuals are responsible to the vendor for purchases made outside of contracts. The contract period is indicated above.



Kevin Tyne, Chief Procurement Officer  
Office of Procurement Services

NP/jl  
Attach

Copy to: Office of Procurement Services  
Eric Bails, Assessor - CIO  
David Moss, OET - GIO

(Please remove Serial 12071-RFP from your contract notebooks)



## CONTRACT PURSUANT TO RFP

SERIAL 15056-RFP

This Contract is entered into this 21<sup>st</sup> day of October, 2015 by and between Maricopa County ("County"), a political subdivision of the State of Arizona, and Pictometry International Corp, a Delaware corporation ("Contractor") for the purchase of imagery services.

1.0 DEFINITIONS: For the purposes of this Contract and in addition to the terms defined throughout this Contract, the following terms shall have the meanings specified in this Section 1.0:

1.1 "Contractor License Terms" means the Pictometry Delivered Content Terms and Conditions of Use, the Pictometry Software Agreement, the Pictometry Online Services General Terms and Conditions of Use and Pictometry Web Visualization Offering Terms and Conditions, all of which set forth the rights granted to County in the Products and the terms and conditions of the County's access to and use of the Products. The Contractor License Terms are attached collectively hereto as Exhibit "B."

1.2 "Final Completion" means the date upon which all Products purchased via a Purchase Order have been delivered to the County, including physical and electronic form where applicable.

1.3 "Products" means the products set forth and described in Exhibit "A" being made available by Contractor to Customer pursuant to this Contract and a validly issued Purchase Order at the fees set forth in Exhibit "A."

2.0 PURCHASE ORDERS:

2.1 From time to time the County may issue a purchase order ("Purchase Order") to purchase access to and use of Products pursuant to the terms and conditions of this Contract. Any such Purchase Order shall: (i) identify this Contract and the terms and conditions of this Contract as controlling; (ii) identify the specific Products in Exhibit A that County is purchasing access to and use of; and (iii) state payments to be made to Contractor pursuant to the pricing set forth in Exhibit A and any other applicable economic terms.

2.2 Any Purchase Order submitted by the County to Contractor shall become a valid and binding component of this Contract. Notwithstanding the foregoing, any additional terms and conditions set forth in a Purchase Order beyond those set forth in this Contract are solely for the County's internal administrative purposes and any such terms and conditions shall be of no force or effect as between the parties unless explicitly agreed to by Contractor in writing.

3.0 CONTRACT TERM:

3.1 This Contract is for a term of one (1) year, beginning on the 21<sup>st</sup> day of October, 2015 and ending the 31<sup>st</sup> day of October, ~~2016~~ 2017 ("Contract Term").

3.2 The County may, at its option and with the written agreement of the Contractor, renew the term of this Contract for additional terms up to a maximum of four (4) years, (or at the County's sole discretion, extend the contract on a month-to-month basis for a maximum of six (6) months after expiration). The County shall notify the Contractor in writing of its intent to extend the Contract

term at least sixty (60) calendar days prior to the expiration of the original contract term, or any additional term thereafter.

**4.0 FEE ADJUSTMENTS:**

4.1 Any request for a fee adjustment must be submitted sixty (60) days prior to the current Contract expiration. Requests for adjustment in cost of labor and/or materials must be supported by appropriate documentation. If County agrees to the adjusted fee, County shall issue written approval of the change. The reasonableness of the request will be determined by comparing the request with the (Consumer Price Index) or by performing a market survey.

**5.0 PAYMENTS:**

5.1 As consideration for performance of the duties described herein, County shall pay Contractor the sum(s) stated in a validly issued Purchase Order at the prices set forth in Exhibit "A."

5.2 Payment shall be made upon the County's receipt of a properly completed invoice.

**5.3 INVOICES:**

5.3.1 The Contractor shall submit one (1) legible copy of their detailed invoice before payment(s) can be made. Incomplete invoices will not be processed. At a minimum, the invoice must provide the following information:

- Company name, address and contact
- County bill-to name and contact information
- Contract Serial Number
- County purchase order number
- Invoice number and date
- Payment terms
- Date of service or delivery
- Quantity (number of days or weeks)
- Contract Item number(s)
- Description of Purchase (product or services)
- Pricing per unit of purchase
- Freight (if applicable)
- Extended price
- Arrival and completion time (if applicable)
- Total Amount Due

5.3.2 Problems regarding billing or invoicing shall be directed to the using agency as listed on the Purchase Order.

5.3.3 Payment shall be made to the Contractor by the County through the Maricopa County Vendor Express Payment Program

5.3.4 EFT payments to the routing and account numbers designated by the Contractor will include the details on the specific invoices that the payment covers. The Contractor is required to discuss remittance delivery capabilities with their designated financial institution for access to those details.

**5.4 PAYMENT RETENTION:**

5.4.1 Fifty percent (50%) of monies paid for Delivered Content (as defined in the attached Pictometry Delivered Content Terms and Conditions of Use) earned by Contractor related to a Purchase Order shall be retained by County until an initial delivery, including in electronic form, of the Delivered Content is made by Contractor. Upon said initial delivery, County shall release to Contractor fifty percent (50%) of the monies owed for the Delivered Content. County shall then release twenty-five percent (25%) of the

remaining monies owed to Contractor for Delivered Content upon Final Completion. The remaining twenty-five percent (25%) of the monies due to Contractor shall be paid within three (3) months of Final Completion. All monies owed to Contractor by County for Delivered Content shall be paid in full within three (3) months of Final Completion.

- 5.4.2 The County may elect to release specific retention payments based on mutually agreed milestones, but in no case shall retention be released prior to Final Completion. All other payment terms and conditions shall not be affected by the retention. In the event of termination or cancellation of this Contract by County through no fault of Contractor, Contractor shall be entitled to the refund of any funds in the retention account.
- 5.4.3 After fifty percent (50%) of the Products have been delivered, the County may reduce the retainage to five percent (5%) of all monies previously earned and all monies earned thereafter. Any reduction in retainage shall be in the discretion of the County. Any interest earned on retainage shall accrue solely to the benefit of County.
- 5.4.4 The payment retention set forth in this Section 5.4 does not apply to payment for online services or web visualization services. Monies for said products are earned upon activation of said products. Payment for said products is due within thirty (30) days of the County's receipt of a properly submitted invoice.

5.5 APPLICABLE TAXES:

- 5.5.1 **Payment of Taxes:** The Contractor shall pay all applicable taxes for which Contractor is legally responsible. Unless evidence of sales tax exemption is provided, the County is responsible for and shall pay all applicable sales taxes. With respect to any installation labor on items that are not attached to real property performed by Contractor under the terms of this Contract, the installation labor cost and the gross receipts for materials provided shall be listed separately on the Contractor's invoices.
- 5.5.2 **State and Local Transaction Privilege Taxes:** The County is subject to all applicable state and local transaction privilege taxes. To the extent any state and local transaction privilege taxes apply to sales made under the terms of this Contract it is the responsibility of the Contractor to collect and remit all applicable taxes to the proper taxing jurisdiction of authority.
- 5.5.3 **Tax Indemnification:** Contractor and all subcontractors shall pay all Federal, state, and local taxes applicable to its operation and any persons employed by the Contractor. Contractor shall, and require all subcontractors to hold the County harmless from any responsibility for taxes, damages and interest, if applicable, contributions required under Federal, and/or state and local laws and regulations and any other costs including transaction privilege taxes, unemployment compensation insurance, Social Security and Worker's Compensation.

6.0 AVAILABILITY OF FUNDS:

- 6.1 The provisions of this Contract relating to payment for Products shall become effective when funds assigned for the purpose of compensating the Contractor as herein provided are actually available to County for disbursement. The County shall be the sole judge and authority in determining the availability of funds under this Contract. County shall keep the Contractor fully informed as to the availability of funds. The parties agree that the County's issuance of a Purchase Order constitutes the County's acknowledgment that the funds to pay for the Products set forth in a Purchase Order have been appropriated and are available for disbursement to Contractor.
- 6.2 If any action is taken by any state agency, Federal department or any other agency or instrumentality to suspend, decrease, or terminate its fiscal obligations under, or in connection with, this Contract, County may amend, suspend, decrease, or terminate its obligations under, or in connection with, this Contract as set forth in Sections 8.5, 8.6, 8.7 and 8.8 below.

**7.0 DUTIES:**

- 7.1 The Contractor shall perform all duties stated in Exhibit "A" with respect to Products as ordered by the County by issuance of a Purchase Order or as otherwise agreed to in writing by both parties.
- 7.2 During the Contract Term, County may provide Contractor's personnel with adequate workspace for consultants and such other related facilities as may be required by Contractor to carry out its contractual obligations.

**8.0 TERMS and CONDITIONS:**

**8.1 INDEMNIFICATION:**

To the fullest extent permitted by law, and to the extent that claims, damages, losses or expenses are not covered and paid for by insurance purchased by the Contractor, the Contractor shall defend indemnify and hold harmless the County (as Owner), its agents, representatives, agents, officers, directors, officials, and employees from and against all claims, damages, losses, expenses (including, but not limited to attorneys' fees, court costs, expert witness fees, and the costs of attorneys' fees for appellate proceedings) arising out of, or alleged to have resulted from the negligent acts, errors, omissions, or mistakes of Contractor, its agents, representatives, officers, directors, officials and employees, relating to the performance of this Contract.

Contractor's duty to defend, indemnify, and hold harmless the County, its agents, representatives, agents, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss, or expense that is attributable to bodily injury, sickness, disease, death or injury to, impairment of, or destruction of tangible property, including loss of use resulting there from, caused by negligent acts, errors, omissions, or mistakes in the performance of this Contract, but only to the extent caused by the negligent acts or omissions of the Contractor, a subcontractor, any one directly or indirectly employed by them, or anyone for whose acts they may be liable.

The amount and type of insurance coverage requirements set forth herein will in no way be construed as limiting the scope of the indemnity in this paragraph.

The scope of indemnification does not extend to the negligence of County.

**8.2 INSURANCE:**

8.2.1 Contractor, at Contractor's own expense, shall purchase and maintain the herein stipulated minimum insurance from a company or companies duly licensed by the State of Arizona and possessing a current A.M. Best, Inc. rating of B++ or higher. In lieu of State of Arizona licensing, the stipulated insurance may be purchased from a company or companies, which are authorized to do business in the State of Arizona, provided that said insurance companies meet the approval of County. The form of any insurance policies and forms must be acceptable to County.

8.2.2 All insurance required herein shall be maintained in full force and effect until all work or service required to be performed under the terms of the Contract is satisfactorily completed and formally accepted. Failure to do so may, at the sole discretion of County, constitute a material breach of this Contract.

8.2.3 Contractor's insurance shall be primary insurance as respects County, and any insurance or self-insurance maintained by County shall not contribute to it.

8.2.4 Any failure to comply with the claim reporting provisions of the insurance policies or any breach of an insurance policy warranty shall not affect the County's right to coverage afforded under the insurance policies.

8.2.5 The insurance policies may provide coverage that contains deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to County under such policies. Contractor shall be solely responsible for the deductible and/or self-insured retention and County, at its option, may require Contractor to secure payment of such deductibles or self-insured retentions by a surety bond or an irrevocable and unconditional letter of credit.

8.2.6 The insurance policies required by this Contract, except Workers' Compensation and Errors and Omissions, shall name County, its agents, representatives, officers, directors, officials and employees as Additional Insureds.

8.2.7 The policies required hereunder, except Workers' Compensation and Errors and Omissions, shall contain a waiver of transfer of rights of recovery (subrogation) against County, its agents, representatives, officers, directors, officials and employees for any claims arising out of Contractor's work or service.

8.2.8 **Commercial General Liability.**

Commercial General Liability insurance ("CGL") and, if necessary, Commercial Umbrella insurance with a limit of not less than \$2,000,000 for each occurrence, \$4,000,000 Products/Completed Operations Aggregate, and \$4,000,000 General Aggregate Limit. The policy shall include coverage for premises liability, bodily injury, broad form property damage, personal injury, products and completed operations and blanket contractual coverage, and shall not contain any provisions which would serve to limit third party action over claims. There shall be no endorsement or modifications of the CGL limiting the scope of coverage for liability arising from explosion, collapse, or underground property damage.

8.2.9 **Automobile Liability.**

Commercial/Business Automobile Liability insurance and, if necessary, Commercial Umbrella insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence with respect to any of the Contractor's owned, hired, and non-owned vehicles assigned to or used in performance of the Contractor's work or services or use or maintenance of the Premises under this Contract.

8.2.10 **Workers' Compensation.**

Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor's employees engaged in the performance of the work or services under this Contract; and Employer's Liability insurance of not less than \$1,000,000 for each accident, \$1,000,000 disease for each employee, and \$1,000,000 disease policy limit.

Contractor, its contractors and its subcontractors waive all rights against Contractor and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the Workers' Compensation and Employer's Liability or commercial umbrella liability insurance obtained by Contractor, its contractors and its subcontractors pursuant to this Contract.

8.2.11 **Errors and Omissions (Professional Liability) Insurance.**

Errors and Omissions (Professional Liability) insurance and, if necessary, Commercial Umbrella insurance, which shall insure and provide coverage for errors or omissions or professional liability of the **CONTRACTOR**, with limits of no less than \$2,000,000 for each claim.

8.2.12 **Professional Liability.**

Contractor shall maintain Professional Liability insurance which shall provide coverage for any and all acts arising out of the work or services performed by the Contractor under the terms of this Contract, with a limit of not less than \$1,000,000 for each claim, and \$3,000,000 aggregate claims.

8.2.13 **Aviation:**

**CONTRACTOR** shall maintain Aviation Liability Insurance and, if necessary, Commercial Umbrella Insurance with a combined single limit for bodily injury and property damage of no less than \$1,000,000, each occurrence, with respect to **CONTRACTOR'S** aircraft (including owned, hired, non-owned), assigned to or used in the performance of this Contract.

8.2.14 Certificates of Insurance.

8.2.14.1 Contractor shall furnish the County with valid and complete certificates of insurance or formal endorsements as required by this Contract in the form provided by the County, issued by Contractor's insurer(s), as evidence that policies providing the required coverage, conditions and limits required by this Contract are in full force and effect. Such certificates shall identify this Contract number and title.

8.2.14.2 In the event any insurance policy (ies) required by this Contract is (are) written on a "claims made" basis, coverage shall extend for two years past completion and acceptance of Contractor's work or services and as evidenced by annual Certificates of Insurance.

8.2.14.3 If a policy does expire during the Contract Term, Contractor shall furnish a renewal certificate to County fifteen (15) days' prior to the expiration date.

8.2.15 Cancellation and Expiration Notice.

Insurance required herein shall not be permitted to expire, be canceled, or materially changed without thirty (30) days prior written notice to the County.

8.3 **WARRANTY OF SERVICES:**

Contractor warrants that the Products shall be true and usable copies as of the date of capture. Upon notice to Contractor of any breach of that warranty, Contractor shall use commercially reasonable efforts to correct the problem to ensure that the image products and related data are usable for the general purposes intended. If Contractor is in breach, and has failed to cure that breach, this Contract may be terminated, all licensed products returned to Contractor and all monies paid to Contractor by the County with respect to the affected Products shall be returned. This provision shall not limit County's right to pursue any other legal remedies as a result of Contractor's breach hereunder.

The County shall notify Contractor within six (6) months from the date of capture if any Product provided is unusable or corrupted. If necessary, in the sole discretion of the County, Contractor shall replace the unusable or corrupted Product with useable copies. This shall include replacing unacceptable images with new images if the images are determined to be unsalvageable.

8.4 **INSPECTION OF SERVICES:**

8.4.1 Complete records of all inspection work performed by the Contractor shall be maintained and made available to County during contract performance and for as long afterwards as this Contract requires, as set forth in Section 8.22 hereunder.

- 8.4.2 County has the right to inspect and test all Products called for by a Purchase Order for up to three (3) months after Final Completion (“Inspection Period”) County shall perform inspections and tests in a manner that will not unduly delay the work. Unless otherwise notified in writing during the Inspection Period of specific defects in the Products, the Products shall be deemed automatically accepted by the County upon expiration of the Inspection Period.
- 8.4.3 If any of the Products do not conform to Contract requirements, County may require the Contractor to re-deliver the Products again in conformity with Contract requirements, at no cost to the County. When the defects in Products cannot be corrected by re-performance or re-delivery, County may:
- 8.4.3.1 Require the Contractor to take necessary action to ensure that future Products conform to Contract requirements; and
  - 8.4.3.2 Reduce the Purchase Order price to reflect the reduced value of the Products delivered.
- 8.4.4 If the Contractor fails to promptly provide the Products again or to take the necessary action to ensure future Products in conformity with Contract requirements, County may:
- 6.4.4.1 By contract or otherwise, perform the services and charge to the Contractor, through direct billing or through payment reduction, any cost incurred by County that is directly related to the performance of such service; or
  - 6.4.4.2 Terminate this Contract for default.

8.5 **REQUIREMENTS CONTRACT:**

- 8.5.1 Contractor acknowledges that this Contract does not guarantee any minimum or maximum number of purchases will be made. . Purchase Orders will only be placed when the County identifies a need and proper authorization and documentation have been approved.
- 8.5.2 County and Contractor agree that any Purchase Order issued by County to Contractor during the Contract Term will be performed under the terms of this Contract. . The County accepts and agrees to the Contractor License Terms with respect to the County’s use of and access to the Products.
- 8.5.3 County reserves the right to cancel Purchase Orders with written notice to Contractor at least ten (10) days prior to the commencement of a flight, provided, however the County shall compensate Contractor for any products in County’s possession for which Contractor has not been fully compensated and the County agrees to reimburse the Contractor for actual and documentable costs incurred by the Contractor in response to the Purchase Order. Costs shall include but are not limited to the following: contracting, flight planning, computer time, processing, labor, etc. The County will not reimburse the Contractor for any costs incurred after receipt of County notice of cancellation, or for lost profits, shipment of product prior to issuance of Purchase Order, etc. Should any Purchase Order be terminated by the County with less than said 10 days’ written notice, the County shall pay Contractor the full contracted for amount of the applicable flight.
- 8.5.4 Contractors agree to accept verbal notification of cancellation of Purchase Orders from the County ; provided however written notification of such cancellation must be received by Contractor at least ten (10) days prior the commencement of a flight.

8.6 **Suspension of Work**

The County may order the Contractor, in writing, to suspend, delay, or interrupt all or any part of a Purchase Order for the period of time that the County determines appropriate for the convenience of the County. No adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted

by any other cause, including the fault or negligence of the Contractor. No request for adjustment under this clause shall be granted unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under this Contract.

8.6.1 If the County suspends a flight with written notice to Contractor at least ten (10) days prior to the commencement of a flight, the County shall compensate Contractor for any products in County's possession for which Contractor has not been fully compensated and the County agrees to reimburse the Contractor for actual and documentable costs incurred by the Contractor in response to suspension of work. Costs shall include but are not limited to the following: contracting, flight planning, computer time, processing, labor, etc. The County will not reimburse the Contractor for any costs incurred after receipt of County notice of the suspension, or for lost profits, shipment of product subsequent to the issuance of the suspension, etc.; provided however should any suspension, delay or interruption be ordered by the County with less than ten (10) days' written notice prior to the commencement of a flight, the County shall pay Contractor the full contracted amount of the applicable flight.

8.7 Stop Work Order

8.7.1 The County may, at any time, by written notice to the Contractor, require the Contractor to stop all, or any part, of the work called for by a Purchase Order for a period of 90 days after the Purchase Order is delivered to the Contractor, and for any further period to which the parties may agree. Such notice shall be specifically identified as a stop work order issued under this clause ("Stop Work Order"). Upon receipt of a Stop Work Order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the Stop Work Order during the period of work stoppage. Within a period of 90 days after a Stop-Work Order is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the County shall either—

- a. Cancel the Stop-Work Order; or
- b. Terminate the Purchase Order covered by the Stop Work Order as provided in the Default, or the Termination for Convenience of the County, clause of this Contract.

8.7.2 The County may make an equitable adjustment in the delivery schedule and/or contract price, or otherwise, and the Purchase Order shall be modified, in writing, accordingly, if the Contractor demonstrates that the Stop Work Order resulted in an increase in costs to the Contractor.

8.7.3 If the County issues a Stop Work Order that affects a previously scheduled flight, the County shall compensate Contractor for any Products in County's possession for which Contractor has not been fully compensated and the County agrees to reimburse the Contractor for actual and documentable costs incurred by the Contractor in response to the Stop Work Order. Costs shall include but are not limited to the following: contracting, flight planning, computer time, processing, labor, etc. The County will not reimburse the Contractor for any costs incurred after receipt of a Stop Work Order, or for lost profits, shipment of product subsequent to issuance of the suspension, etc.; provided however should any Stop Work Order be given by the County to the Contractor with less than ten (10) days' written notice to the Contractor prior the commencement of a flight, the County shall pay Contractor the full contracted for amount of the applicable flight.

8.8 UNCONDITIONAL TERMINATION FOR CONVENIENCE OF THIS CONTRACT:

The County may terminate this Contract for convenience by providing sixty (60) calendar days advance written notice to the Contractor. A termination of this Contract would also include the termination of any outstanding Purchase Order(s).

Should the County terminate this Contract, the County shall compensate Contractor for any products in County's possession for which Contractor has not been fully compensated and the County agrees to reimburse the Contractor for actual and documentable costs incurred by the Contractor in response to any outstanding Purchase Order(s). Costs shall include but are not limited to the following: contracting, flight planning, computer time, processing, labor, etc. The County will not reimburse the Contractor for any costs incurred after receipt of County notice of cancellation, or for lost profits, shipment of product prior to issuance the outstanding Purchase Order(s), etc. Should any Purchase Order be terminated by the County with less than said 10 days' written notice, the County shall pay Contractor the full contracted for amount of the applicable flight.

**8.9 TERMINATION FOR DEFAULT:**

8.9.1 The County may, by written notice of default to the Contractor, terminate this Contract in whole or in part if the Contractor fails to:

Deliver the Products or to perform the services within the time specified in a Purchase Order or any extension;

- a. Make progress, so as to endanger performance of this Contract or a Purchase Order; or
- b. Perform any of the other provisions of this Contract.

8.9.2 The County's right to terminate this Contract under these subparagraphs may be exercised if the Contractor does not cure such failure in a manner deemed accepted to the County within ten (10) days (or more if authorized in writing by the County) after receipt of the notice from the County specifying the failure.

**8.10 STATUTORY RIGHT OF CANCELLATION FOR CONFLICT OF INTEREST:**

Notice is given that pursuant to A.R.S. § 38-511 the County may cancel any Contract without penalty or further obligation within three years after execution of the Contract, if any person significantly involved in initiating, negotiating, securing, drafting or creating the Contract on behalf of the County is at any time while the Contract or any extension of the Contract is in effect, an employee or agent of any other party to the Contract in any capacity or consultant to any other party of the Contract with respect to the subject matter of the Contract. Additionally, pursuant to A.R.S § 38-511 the County may recoup any fee or commission paid or due to any person significantly involved in initiating, negotiating, securing, drafting or creating the Contract on behalf of the County from any other party to the Contract arising as the result of the Contract.

**8.11 CONTRACTOR LICENSE REQUIREMENT:**

8.11.1 The Contractor shall procure all permits, insurance, licenses and pay the charges and fees necessary and incidental to the lawful conduct of its/his/her business, and as necessary to complete any required certification requirements, required by any and all governmental or non-governmental entities as mandated to maintain compliance with and in good standing for all permits and/or licenses. Contractor shall keep fully informed of existing and future trade or industry requirements, Federal, State and Local laws, ordinances, and regulations which in any manner affect the fulfillment of a Contract and shall comply with the same. Contractor shall immediately notify both the Procurement Officer of any and all changes concerning permits, insurance or licenses.

8.11.2 If Contractor furnishes finished products, materials or articles of merchandise that will require installation or attachment as part of the Contract, Contractor shall possess any licenses required. Contractor will not be relieved of its obligation to possess the required licenses by subcontracting of the labor portion of the Contract. Contractor shall notify the Procurement Officer which license(s), if any, the Arizona Registrar of Contractors, Chief of Licensing requires for performance of the Contract.

**8.12 SUBCONTRACTING:**

- 8.12.1 Except for the subcontractors identified in Exhibit A, the Contractor may not assign to another contractor or subcontract to another party for performance of the terms and conditions hereof without the written consent of the County. All correspondence authorizing subcontracting must reference the Bid Serial Number and identify the job project.
- 8.12.2 A subcontractor's rate for the job shall not exceed that of the Contractor's rate, as set forth in Exhibit A, unless the Contractor is willing to absorb any higher rates or the County has approved the increase. A subcontractor's invoice shall be invoiced directly to the Contractor, who in turn shall pass-through the costs to the County as set forth in Exhibit A. A copy of a subcontractor's invoice must accompany the Contractor's invoice.

**8.13 AMENDMENTS:**

All amendments to this Contract shall be in writing and approved/signed by both parties. Maricopa County Office of Procurement Services shall be responsible for approving all amendments for the County.

**8.14 ADDITIONS/DELETIONS OF SERVICE:**

- 8.14.1 The County reserves the right to add and/or delete products, materials and services to the Contract. If additional products, materials or services are required from this Contract, prices for such additions will be negotiated between the Contractor and the County.
- 8.14.2 The County reserves the right of final approval on proposed staff for all Purchase Orders. Also, upon request by the County, the Contractor will be required to remove any employees working on County projects and substitute personnel based on the discretion of the County within two business days, unless previously approved by the County.

**8.15 SEVERABILITY:**

The invalidity, in whole or in part, of any provision of this Contract shall not void or affect the validity of any other provision of this Contract.

**8.16 COUNTY'S USE OF AND ACCESS TO PRODUCTS; RIGHTS IN DATA:**

- 8.16.1 The County accepts and agrees to the Contractor License Terms (attached hereto as Exhibit B) with respect to the County's , its Authorized Users' and Authorized Subdivisions' (as those terms are defined in the Contractor License Terms) use of and access to the Products. Notwithstanding any other provision set forth in this Contract or Exhibit B or attachment hereto, the County shall own the copies of the orthogonal imagery and LiDAR products delivered to the County pursuant to the contract (the "Transferred Deliverables"). As such, the County is free to use, reproduce and redistribute copies of the Transferred Deliverables in any manner without any accounting to Contractor. Contractor shall own those copies of the Transferred Deliverables that remain in Contractor's possession. As such, Contractor is free to use, reproduce and redistribute copies of the Transferred Deliverables in any manner without any accounting to the County.
- 8.16.2 All inventions, discoveries, improvements, technology, designs, works of authorship, patents, copyrights, technical information, data, databases, software, business information and other information used to create the Transferred Deliverables remain the sole and exclusive property of the Contractor.

- 8.16.3 All other Products not specifically mentioned in this section 8.16 that are provided pursuant to this Contract and a Purchase Order remain the exclusive property of Contractor.
- 8.16.4 In the event of any conflict between this section and Section 8.31 or the terms of any other Exhibit or attachment hereto, the terms of Section 8.16 shall prevail.

8.17 **NON-DISCRIMINATION:**

Contractor agrees to comply with all provisions and requirements of Arizona Executive Order 2009-09 including flow down of all provisions and requirements to any subcontractors. Executive Order 2009-09 supersedes Executive order 99-4 and amends Executive order 75-5 and may be viewed and downloaded at the Governor of the State of Arizona's website <http://azmemory.azlibrary.gov/cdm/singleitem/collection/execorders/id/680/rec/1> which is hereby incorporated into this Contract as if set forth in full herein. During the performance of this Contract, Contractor shall not discriminate against any employee, client or any other individual in any way because of that person's age, race, creed, color, religion, sex, disability or national origin.

8.18 **CERTIFICATION REGARDING DEBARMENT AND SUSPENSION**

- 8.18.1 The undersigned (authorized official signing for the Contractor) certifies to the best of his or her knowledge and belief, that the Contractor is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency;

have not within 3-year period preceding this Contract been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

are not presently indicted or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and

have not within a 3-year period preceding this Contract had one or more public transaction(s) (Federal, State or local) terminated for cause of default.

- 8.18.2 The Contractor agrees to include, without modification, this clause in all lower tier covered transactions (i.e. transactions with subcontractors) and in all solicitations for lower tier covered transactions related to this Contract.

8.19 **VERIFICATION REGARDING COMPLIANCE WITH ARIZONA REVISED STATUTES §41-4401 AND FEDERAL IMMIGRATION LAWS AND REGULATIONS:**

- 8.19.1 By entering into this Contract, the Contractor warrants compliance with the Immigration and Nationality Act (INA using E-verify) and all other federal immigration laws and regulations related to the immigration status of its employees and A.R.S. §23-214(A). The Contractor shall obtain statements from its subcontractors certifying compliance and shall furnish the statements to the Procurement Officer upon request. These warranties shall remain in effect through the term of this Contract. The Contractor and its subcontractors shall also maintain Employment Eligibility Verification forms (I-9) as required by the Immigration Reform and Control Act of 1986, as amended from time to time, for all employees performing work under the Contract and verify employee compliance using the E-verify system and shall keep a record of the verification for the duration of the employee's employment or at least three years, whichever is longer. I-9 forms are available for download at USCIS.GOV.

8.19.2 The County retains the legal right to inspect Contractor and subcontractor employee documents performing work under this Contract to verify compliance with paragraph 6.20.1 of this Section. Contractor and subcontractor shall be given reasonable notice of the County's intent to inspect and shall make the documents available at the time and date specified. Should the County suspect or find that the Contractor or any of its subcontractors are not in compliance, the County shall consider this a material breach of the Contract and may pursue any and all remedies allowed by law, including, but not limited to: suspension of work, termination of the Contract for default, and suspension and/or debarment of the Contractor. All costs necessary to verify compliance are the responsibility of the Contractor.

8.20 INFLUENCE

As prescribed in MC1-1202 of the Maricopa County Procurement Code, any effort to influence an employee or agent to breach the Maricopa County Ethical Code of Conduct or any ethical conduct may be grounds for Disbarment or Suspension under MC1-902.

An attempt to influence includes, but is not limited to:

8.20.1 A Person offering or providing a gratuity, gift, tip, present, donation, money, entertainment or educational passes or tickets, or any type valuable contribution or subsidy,

8.20.2 That is offered or given with the intent to influence a decision, obtain a contract, garner favorable treatment, or gain favorable consideration of any kind.

If a Person attempts to influence any employee or agent of the County, the Chief Procurement Officer, or his designee, reserves the right to seek any remedy provided by the Maricopa County Procurement Code, any remedy in equity or in the law, or any remedy provided by this contract.

8.21 CONTRACTOR EMPLOYEE WHISTLEBLOWER RIGHTS AND REQUIREMENT TO INFORM EMPLOYEES OF WHISTLEBLOWER RIGHTS.

8.21.1 The parties agree that this Contract and employees working on this Contract will be subject to the whistleblower rights and remedies in the pilot program on contractor employee whistleblower protections established at 41 U.S.C. § 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (Pub. L. 112-239) and section 3.908 of the Federal Acquisition Regulation;

8.21.2 Contractor shall inform its employees in writing, in the predominant language of the workforce, of employee whistleblower rights and protections under 41 U.S.C. § 4712, as described in Section 3.908 of the Federal Acquisition Regulation. Documentation of such employee notification must be kept on file by Contractor and copies provided to County upon request.

8.21.3 Contractor shall insert the substance of this clause, including this paragraph (c), in all subcontracts over the simplified acquisition threshold (\$150,000 as of September 2013).

8.22 ACCESS TO AND RETENTION OF RECORDS FOR THE PURPOSE OF AUDIT AND/OR OTHER REVIEW:

8.22.1 In accordance with section MCI 371 of the Maricopa County Procurement Code the Contractor agrees to retain all books, records, accounts, statements, reports, files, and other records and back-up documentation relevant to this Contract for six (6) years after final payment or until after the resolution of any audit questions which could be more than six (6) years, whichever is latest. The County, Federal or State auditors and any other persons duly authorized by the Department shall have full access to, and the right to examine, copy and make use of, any and all said materials.

8.22.2 If the Contractor's books, records, accounts, statements, reports, files, and other records and back-up documentation relevant to this Contract are not sufficient to support and document that requested services were provided, the Contractor shall reimburse Maricopa County for the services not so adequately supported and documented.

8.22.3 If at any time it is determined by the County that a cost for which payment has been made is a disallowed cost, the County shall notify the Contractor in writing of the disallowance. The course of action to address the disallowance shall be at sole discretion of the County, and may include either an adjustment to future invoices, request for credit, request for a check or deduction from current billings Submitted by the Contractor by the amount of the disallowance, or to require reimbursement forthwith of the disallowed amount by the Contractor by issuing a check payable to Maricopa County.

**8.23 AUDIT DISALLOWANCES:**

If at any time, County determines that a cost for which payment has been made is a disallowed cost, such as overpayment, County shall notify the Contractor in writing of the disallowance. County shall also state the means of correction, which may be but shall not be limited to adjustment of any future claim submitted by the Contractor by the amount of the disallowance, or to require repayment of the disallowed amount by the Contractor.

**8.24 OFFSET FOR DAMAGES:**

In addition to all other remedies at Law or Equity, the County may offset from any money due to the Contractor any amounts Contractor owes to the County for damages resulting from breach or deficiencies in performance of the contract.

**8.25 PUBLIC RECORDS:**

Under Arizona law, all Offers submitted and opened are public records and must be retained by the Records Manager at the Office of Procurement Services. Offers shall be open to public inspection and copying after Contract award and execution, except for such Offers or sections thereof determined to contain proprietary or confidential information by the Office of Procurement Services. If an Offeror believes that information in its Offer or any resulting Contract should not be released in response to a public record request under Arizona law, the Offeror shall indicate the specific information deemed confidential or proprietary and submit a statement with its offer detailing the reasons that the information should not be disclosed. Such reasons shall include the specific harm or prejudice which may arise from disclosure. The Records Manager of the Office of Procurement Services shall determine whether the identified information is confidential pursuant to the Maricopa County Procurement Code.

**8.26 PRICES:**

Except for the products and services provided by subcontractors to Contractor, Contractor warrants that prices extended to County under this Contract are no higher than those paid by any other customer for these or similar services for areas similar in geography, topography, population size and density, and climate as the County.

**8.27 INTEGRATION:**

This Contract represents the entire and integrated agreement between the parties and supersedes all prior negotiations, proposals, communications, understandings, representations, or agreements, whether oral or written, express or implied.

8.28 RELATIONSHIPS:

In the performance of the services described herein, the Contractor shall act solely as an independent contractor, and nothing herein or implied herein shall at any time be construed as to create the relationship of employer and employee, co-employee, partnership, principal and agent, or joint venture between the County and the Contractor.

8.29 GOVERNING LAW:

This Contract shall be governed by the laws of the State of Arizona. Venue for any actions or lawsuits involving this Contract shall be in Maricopa County Superior Court or in the United States District Court for the District of Arizona, sitting in Phoenix, Arizona.

8.30 ORDER OF PRECEDENCE:

In the event of a conflict among any of the contract components comprising this Contract, order of precedence for resolving such conflict shall be, from highest (i.e., supersedes all others) to lowest (i.e., subordinate to all others): the provision of this Contract; Exhibit B; Exhibit A; and Exhibit C.

8.31 SCHEDULE OF CONSORTIUM PARTNERS AND LIMITATIONS ON RESALE

8.31.1 There shall be a 270 day limitation on resale/distribution of Products by Contractor to any of the identified Consortium Partners in this section effective beginning from earlier of the date of full (100%) payment of Products by the County or expiration of the Inspection Period. In the event the County exercises a flight renewal, the 270 day limitation on resale/distribution shall apply to each specific project thereafter. The County shall document the contribution amounts for any semi-governmental entity (as identified below), provide such documentation to Contractor and require each semi-governmental entity to purchase a separate Connect account directly from Contractor.

8.31.2 For purposes of this Section 8.31, the term Consortium Partners shall mean any of the following:

Arizona State Land Department  
Apache Junction  
Avondale  
Chandler  
El Mirage  
Fountain Hills  
Gilbert  
Gila Bend AFB  
Glendale  
Luke AFB  
MAG  
Mesa  
Peoria  
Phoenix  
Queen Creek  
Scottsdale  
SRP (semi-governmental entity)  
SRPMIC  
Surprise  
APS (semi-governmental entity)  
Tempe  
Phoenix-Mesa Gateway Airport  
AK-Chin Indian Community  
USGS

8.31.3 Consortium Members shall be deemed Authorized Subdivisions as that term is defined in the Contractor License Terms.

8.32 DELIVERY

Delivery of imagery Products pursuant to the first Purchase Order issued by the County under this Contract shall be as follows:

- Imagery shall be made available to the County via Connect Early Access (*see* Exhibit A for detailed product description) by January 1, 2016 and will remain available to the County until said imagery is made available through Connect Image Service (*see* Exhibit A for detailed product description), as set forth below;
- The initial delivery of orthomosaics shall be made to the County by February 25, 2016 via Connect Image Service (*see* Exhibit A for detailed product description) and hard drive; and
- Final delivery of all Products shall be made by May 26, 2016.

8.33 INCORPORATION OF DOCUMENTS:

The following are to be attached to and made part of this Contract:

8.33.1 Exhibit A, Pricing, Product Descriptions and Product Parameters

8.33.2 Exhibit B, Contractor License Terms

8.33.3 Exhibit C, Office of Procurement Services Travel and Per Diem Policy

NOTICES:

All notices given pursuant to the terms of this Contract shall be addressed to:

For County:

Maricopa County  
Office of Procurement Services  
ATTN: Contract Administration  
320 West Lincoln Street  
Phoenix, Arizona 85003-2494

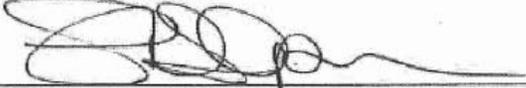
For Contractor:

Pictometry International Corp.  
Attn: General Counsel  
25 Methodist Hill Drive  
Rochester, New York 14623

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IN WITNESS WHEREOF, this Contract is executed on the date set forth above.

**CONTRACTOR**



AUTHORIZED SIGNATURE

*Linda K. Salpini, Senior vice President, Finance*

PRINTED NAME AND TITLE

*25 Methodist Hill Drive, Rochester, NY 14623*

ADDRESS

*October 12, 2015*

DATE

**MARICOPA COUNTY**

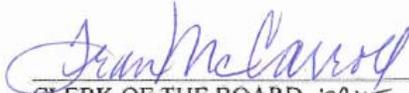


CHAIRMAN, BOARD OF SUPERVISORS

*OCT 23 2015*

DATE

**ATTESTED:**



CLERK OF THE BOARD 10/2/15

*OCT 23 2015*

DATE

**APPROVED AS TO FORM:**



LEGAL COUNSEL

*October 20, 2015*

DATE

**EXHIBIT A**

**PRODUCTS, PRODUCT DESCRIPTIONS, PRICING AND PRODUCT PARAMETERS & SPECIFICATIONS**

For the purposes of this Exhibit A, the term “Pictometry” shall have the same meaning as Contractor and the term “Customer” shall have the same meaning as the County.

QTY	PRODUCT NAME	PRODUCT DESCRIPTION	PRICE
1	3D Model - Platinum - 3, 4 or 6 inch GSD imagery (sq km)	Platinum Level 3D Model built from 3, 4 or 6 inch GSD Pictometry Imagery. Model can be provided in up to 3 formats) Additional formats can be delivered for a fee. Minimum square kilometers required.	\$5,995-\$4,995 per km <sup>2</sup> <sup>i</sup>
1	3D Orthodrape - 3, 4 or 6 inch GSD imagery (sq km)	3D Orthodrape built from 3, 4 or 6 inch GSD Pictometry Imagery.	\$500.00
1	ChangeFinder - Building Outlines with Customer's Electronic Parcel Files	Outlines will be generated off the data source indicated in the Product Parameters. For Pictometry imagery – the most nadir orthorectified orthogonal frame image within the associated Data Source indicated in the Product Parameters will be used for processing by default. CDO tiles will be used by default if purchased with the associated Data Source indicated in the Product Parameters. Building Outline delivery will be provided in polygon shapefile and .gdb format. The final parcel count for this order will be based on the total record count of the final parcel file provided by Customer at the time the project is initiated. The Customer will be invoiced for any additional costs based on the final number of parcels, including any changes in tiered pricing as a result of a change in volume, at the time of shipment of the deliverable.	See tiered pricing below <sup>ii</sup>
1	ChangeFinder - Change Detection with Customer's Electronic Parcel Files	Building Outline data from this order OR from an approved Data Source will be updated and categorized against the Imagery Data Source indicated in the Product Parameters. For Pictometry imagery – the most nadir orthorectified orthogonal frame image within the associated Data Source indicated in the Product Parameters will be used for processing by default. CDO tiles will be used by default if purchased with the associated Data Source indicated in the Product Parameters. An updated Building Outline delivery will be provided in polygon shapefile and .gdb format. The final parcel count for this order will be based on the total record count of the final parcel file provided by Customer at the time the project is initiated. The Customer will be invoiced for any additional costs based on the final number of parcels, including any changes in tiered pricing as a result of a change in volume, at the time of shipment of the deliverable.	See tiered pricing below <sup>ii</sup>
1	CONNECT ImageService CA	Connect Image Service - CA (Custom Access) provides access via a secure web mapping service to existing orthomosaics available within Customer’s Connect account. This service allows use by Customer each calendar month of a total number of image request transactions equal to the product resulting from multiplying (a) the number of concurrent users authorized to use the Connect Image Service pursuant to this Agreement, by (b) 1500 (such product being the	\$5,000.00 <sup>iii</sup>

		<p>“Monthly Image Request Limit”). To the extent use of the Connect Image Service pursuant to this Agreement results in a total number of image request transactions in excess of the Monthly Image Request Limit, Pictometry may review the usage with Customer, increase the price for Customer’s Connect Image Service with Customer’s consent or, in Pictometry’s discretion, suspend further access by Customer to the Connect Image Service. This offering is provided solely for internal use within Customer’s organization. Customer must maintain an active paid Pictometry Connect account in order to utilize the Connect Image Service.</p>	
<p>1</p>	<p>Critical 360 Solution - Initial Building of Project</p>	<p>Critical 360 Solution - Initial Building of Project provides with respect to the first building of a project (up to maximum of 250,000 sq. ft. of floor area of that building) the following deliverables: 1) floor plan (geo-referenced vector format DWG files and corresponding SketchUp (SKP) and PDF files); 2) geo-referenced indoor image capture, 360 degree panoramic file from such capture (GeoTIFF files) and LiDAR scan of building interior (LAS files); 3) linking from floor plan to ancillary Customer-provided data or data feeds (e.g., MSDS sheets (pdf documents); live video feed URL’s hyperlinked to floor plan) to the extent (a) specified by Customer in writing as part of the order, and (b) made available by Customer at or prior to the time of processing the floor plan; 4) integrated oblique/360 image viewing software for use by Customer and local governments and government agencies and districts having responsibilities with respect to the subject building; 5) portable digital media containing all deliverables for project; and 6) project administration, including setup, coordination of data capture, equipment transportation to initial building, equipment operators (including their travel) and web-based training for Customer staff and other authorized users. This product does not include hosting or subscription fees for Pictometry CONNECT or other online hosting services for the deliverables which, if required, must be separately purchased.</p> <p>Timely completion of the project at stated per building price requires the following assistance from Customer representatives:</p> <ul style="list-style-type: none"> <li>- Providing contact information for on-site building project coordinator having knowledge of and access to all areas of each building in project;</li> <li>- Organizing a pre-capture meeting with Customer and all building stakeholders prior to data collection efforts;</li> <li>- Providing copies of existing floor plans for each building for planning purposes, if available;</li> <li>- Providing letter of authorization to facilitate on-site data collection;</li> <li>- Assistance with day to day collection coordination; and</li> <li>- Review of incremental project deliverables.</li> </ul>	<p>\$22,000.00</p>

1	Critical 360 Solution - Single Building Additional Coverage	Critical 360 Solution - Single Building Additional Coverage provides with respect to any one building for which this service has been ordered coverage of up to 250,000 sq. ft. of additional incremental floor area and provision of the same deliverables as ordered with respect to the initial area of the building. Units of Single Building Additional Coverage must be purchased as necessary to provide total coverage for each building.	\$3,000.00
1	Critical 360 Solution - Subsequent Building	<p>Critical 360 Solution - Subsequent Building provides with respect to any subsequent building (up to maximum of 250,000 sq. ft. of floor area of that subsequent building) of a project located within the same county or district as the initial building the following deliverables: 1) floor plan (geo-referenced vector format DWG files and corresponding SketchUp (SKP) and PDF files); 2) geo-referenced indoor image capture, 360 degree panoramic file from such capture (GeoTIFF files) and LiDAR scan of building interior (LAS files); 3) linking from floor plan to ancillary Customer-provided data or data feeds (e.g., MSDS sheets (pdf documents); live video feed URL's hyperlinked to floor plan) to the extent (a) specified by Customer in writing as part of the order, and (b) made available by Customer at or prior to the time of processing the floor plan; 4) integrated oblique/360 image viewing software for use by Customer and local governments and government agencies and districts having responsibilities with respect to the subject building; 5) portable digital media containing all deliverables for project; and 6) project administration, including setup, coordination of data capture, equipment transportation to initial building, equipment operators (including their travel) and web-based training for Customer staff and other authorized users. This product does not include hosting or subscription fees for Pictometry CONNECT or other online hosting services for the deliverables which, if required, must be separately purchased.</p> <p>Timely completion of the project at stated per building price requires the following assistance from Customer representatives:</p> <ul style="list-style-type: none"> <li>- Providing contact information for on-site building project coordinator having knowledge of and access to all areas of each building in project;</li> <li>- Organizing a pre-capture meeting with Customer and all building stakeholders prior to data collection efforts;</li> <li>- Providing copies of existing floor plans for each building for planning purposes, if available;</li> <li>- Providing letter of authorization to facilitate on-site data collection;</li> <li>- Assistance with day to day collection coordination; and</li> <li>- Review of incremental project deliverables.</li> </ul>	\$19,000.00
1	Critical 360 Solution - 3D Model	Critical 360 Solution - 3D Model provides 3D Model of one project building exterior and immediate vicinity (1 sq. km) for terrain visualization, evacuation planning and tactical	\$3,000.00

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		planning.	
1	Critical 360 Solution - Onsite Training Sessions	Critical 360 Solution - Onsite Training provides one day of onsite end-user training for authorized users of the Critical 360 Solution.	\$2,400.00
1	Electronic Field Study (EFS)	One copy of Electronic Field Study software, latest version.	\$0.00
1	Existing Imagery	Refer to Product Parameters for details on existing imagery to be provided. Access to Existing Imagery via Connect only. Customer shall have access to Existing Imagery so long as they maintain an active Connect account.	\$0.00
1	Feature Mapping & Attribution	Feature Mapping & Attribution Services: Pictometry will provide Customer-specific feature mapping and attribution in accordance with the scope of work determined at the time of project initiation and set forth in a Purchase Order.	Custom pricing dependent upon scope of work.
1	FutureView Conference Only Registration	Conference registration to advanced training designed to maximize deployment. Includes event registration (no airfare or hotel). Must be redeemed within three years of agreement execution date.	\$599.00 <sup>iv</sup>
1	FutureView Full Conference Registration	Full conference registration to advanced training designed to maximize deployment. Includes airfare, hotel room for up to three nights, event registration, and round-trip airfare up to \$500. Customer will be provided with discount code to complete FutureView registration. (Air Travel Restrictions - 30 day advance purchase for airfare, Continental US only, per person round trip airfare at standard coach class rates through Pictometry's travel provider only.) Must be redeemed within three years of agreement execution date.	\$2,500.00
1	IMAGERY - Color Digital Orthophotography - 3 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography - 3 inch GSD ("CDO") consists of 3-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 1 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Contract (the "CDO Deliverables"), notwithstanding anything in this Contract to the contrary. Pictometry shall retain copies of the CDO Deliverables and shall own those copies. Requires minimum purchase of 1,000 contiguous square miles.	\$195.00 <sup>v</sup>
1	IMAGERY - Color Digital Orthophotography - 4 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography - 4 inch GSD ("CDO") consists of 4-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 1 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Contract (the "CDO Deliverables"), notwithstanding anything in this Contract to the contrary. Pictometry shall retain copies of the CDO Deliverables and shall own those copies. Requires minimum purchase of 1,000 contiguous square miles.	\$135.00 <sup>v</sup>
1	IMAGERY - Color Digital Orthophotography - 6 inch	Product includes: Color Digital Orthophotography - 6 inch GSD ("CDO") consists of 6-inch GSD ortho mosaics delivered	\$90.00 <sup>v</sup>

	GSD - Industry-Standard Delivery Format - per square mile	to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 1 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Agreement (the "CDO Deliverables"), notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the CDO Deliverables and shall own those copies. Requires minimum purchase of 1,000 contiguous square miles.	
1	IMAGERY - Color Digital Orthophotography - 9 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography - 9 inch GSD ("CDO") consists of 9-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 2 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Agreement (the "CDO Deliverables"), notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the CDO Deliverables and shall own those copies. Requires minimum purchase of 1,000 contiguous square miles.	\$50.00 <sup>v</sup>
1	IMAGERY - Color Digital Orthophotography Four Band - 3 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography Four Band - 3 inch GSD ("CDO4") consists of 3-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 3 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO4 delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Agreement (the "CDO4 Deliverables"), notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the CDO4 Deliverables and shall own those copies. Requires minimum purchase of 1,000 contiguous square miles.	\$206.25 <sup>v</sup>
1	IMAGERY - Color Digital Orthophotography Four Band - 4 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography Four Band - 4 inch GSD ("CDO4") consists of 4-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 3 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO4 delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Agreement (the "CDO4 Deliverables"), notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the CDO4 Deliverables and shall own those copies. Requires minimum purchase of 1,000 contiguous square miles.	\$146.25 <sup>v</sup>
1	IMAGERY - Color Digital Orthophotography Four Band - 6 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography Four Band - 6 inch GSD ("CDO4") consists of 6-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 3 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO4 delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Agreement (the "CDO4 Deliverables"), notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the CDO4 Deliverables and shall own those copies. Requires	\$98.00 <sup>v</sup>

		minimum purchase of 1,000 contiguous square miles.	
1	IMAGERY - Color Digital Orthophotography Four Band - 9 inch GSD - Industry-Standard Delivery Format - per square mile	Product includes: Color Digital Orthophotography Four Band - 9 inch GSD ("CDO4") consists of 9-inch GSD ortho mosaics delivered to Customer in an open industry-standard digital delivery format not proprietary to Pictometry. See Appendix 4 for mosaic specifications and selected delivery format. Customer shall own the copies of the CDO4 delivered to the Customer in an industry-standard digital delivery format not proprietary to Pictometry pursuant to this Agreement (the "CDO4 Deliverables"), notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the CDO4 Deliverables and shall own those copies.	\$57.50 <sup>v</sup>
1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (3in) Per Sector	Product includes: 3-inch GSD oblique frame images (4-way), 3-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.25 feet/pixel; Nominal Oblique GSD (all values +/-10%): Front Line: 0.24 feet/pixel, Middle Line: 0.28 feet/pixel, Back Line: 0.34 feet/pixel. Requires minimum purchase of 500 contiguous square miles.	\$300.00 <sup>vi</sup>
1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (4in) Per Sector	Product includes 4-inch GSD oblique frame images (4-way), 4-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.32 feet/pixel; Nominal Oblique GSD (all values +/-10%): Front Line: 0.33 feet/pixel, Middle Line: 0.36 feet/pixel, Back Line: 0.44 feet/pixel. Requires minimum purchase of 500 contiguous square miles.	\$280.00 <sup>vi</sup>
1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (6in) Per Sector	Product includes 6-inch GSD oblique frame images (4-way), 6-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.5 feet/pixel; Nominal Oblique GSD (all values +/-10%): Front Line: 0.46 feet/pixel, Middle Line: 0.51 feet/pixel, Back Line: 0.60 feet/pixel. Requires minimum purchase of 500 contiguous square miles.	\$225.00 <sup>v</sup>
1	Integrated Pictometry Application	Integrated Pictometry Applications are web based technologies that allow a developer to embed a web instance into a product / application that connects to a customers Licensed Pictometry-hosted imagery. Currently supports JavaScript / iFrame applications for both Visualization (External or Public Facing) use and/or Analytics (Internal with Measurement Tools) use. Requires a Pictometry Connect or Pictometry Connect PFW / View Account depending on use type.	\$0.00
1	Pictometry for Esri Web AppBuilder	Pictometry for Esri Web AppBuilder is a server based widget for installation on Customer's server that allows users with valid Pictometry Connect accounts to access oblique and orthogonal imagery within web applications authored using Web AppBuilder for ArcGIS (Developer Edition) available separately from Esri. Requires a Pictometry Connect account.	\$1,990.00
1	LiDAR Based Mapping - Misc (sq mi)	Additional LiDAR Based Mapping. Pictometry will provide Customer-specific LiDAR Based Mapping in accordance with the scope of work determined at the time of project initiation and set forth in a Purchase Order.	Custom pricing dependent upon scope of work.

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1	LIDAR DEM - Pictometry (sq mi)	Available with qualifying LiDAR purchase. Gridded bare earth DEM in ArcGIS GRID format. Refer to Appendix 5. Requires minimum purchase of 500 contiguous square miles.	\$35.00 <sup>v</sup>
1	LiDAR Quality Control Assessment USGS (sq mi)	Available with qualifying LiDAR purchase. Quality Control Assessment compliant with USGS LiDAR Base Specification Version 1.2, November 2014. Does not include survey to support accuracy assessment and does not convey qualification for USGS 3DEP funding. Requires minimum purchase of 500 contiguous square miles.	\$25.00 <sup>vii</sup>
1	Survey - Ground Control Points - non-specific	Survey of Ground Control Points (GCPs) performed by appropriately licensed surveyor.	\$45,000.00
1	LiDAR-Custom Classification	Product includes: Additional classification of LiDAR ("LiDAR Deliverables"). See Appendix 6 for specifications and selected delivery format. Customer shall own the copy of LiDAR Deliverables delivered to Customer pursuant to this Agreement, notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the LiDAR Deliverables and shall own those copies. Requires minimum purchase of 500 contiguous square miles.	\$25.00 <sup>v</sup>
1	LIDAR-DEM and 1ft Contours (sq mi)	Available with qualifying LiDAR purchase. Gridded bare earth DEM in ArcGIS GRID format and tiled contours at a 1-foot interval in ESRI Polyline Feature Class format. Refer to Appendix 5. Requires minimum purchase of 500 contiguous square miles.	\$55.00 <sup>v</sup>
1	LIDAR-DEM and 2ft Contours (sq mi)	Available with qualifying LiDAR purchase. Gridded bare earth DEM in ArcGIS GRID format and tiled contours at a 2-foot interval in ESRI Polyline Feature Class format. Refer to Appendix 5. Requires minimum purchase of 500 contiguous square miles.	\$50.00 <sup>v</sup>
1	LIDAR-LICENSED-0.5m postings (sq mi) Custom Area	LiDAR data delivered in tiled LAS format, nominal raw post spacing of 0.5m, vertical accuracy sufficient to support optional generation of 1-ft contours (available separately). Refer to Appendix 5. Requires minimum purchase of 500 contiguous square miles.	\$250.00 <sup>v</sup>
1	LIDAR-LICENSED-0.7m postings (sq mi) Custom Area	LiDAR data delivered in tiled LAS format, nominal raw post spacing of 0.7m, vertical accuracy sufficient to support optional generation of 1-ft contours (available separately). Refer to Appendix 5. Requires minimum purchase of 500 contiguous square miles.	\$175.00 <sup>v</sup>
1	LIDAR-LICENSED-1.0m postings (sq mi) Custom Area	LiDAR data delivered in tiled LAS format, nominal raw post spacing of 1.0m, vertical accuracy sufficient to support optional generation of 2-ft contours (available separately). Refer to Appendix 5. Requires minimum purchase of 500 contiguous square miles.	\$110.00 <sup>v</sup>
1	LiDAR-PURCHASED-USGS QL1 (sq mi) Custom Area	Product includes: LiDAR data ("LiDAR Deliverables") delivered in tiled LAS format, aggregate nominal post spacing (ANPS) of 0.35m or less (equivalent to density of 8 ppm or more), vertical accuracy 10cm RMSEz; deliverables and specifications in accordance with USGS LiDAR Base Specification Version 1.2, November 2014 (the "Base Specification"). Refer to Base Specification for further details. Check point and production ground surveys are not included	\$450.00 <sup>v</sup>

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		with the LiDAR Deliverables and must be provided by the Customer or purchased separately. Customer shall own the copy of LiDAR Deliverables delivered to Customer pursuant to this Agreement, notwithstanding anything in this Agreement to the contrary. Pictometry shall retain copies of the LiDAR Deliverables and shall own those copies. Requires minimum purchase of 500 contiguous square miles.	
1	Media Drive Capacity 1.862T- Drive Model 2.0T - EXTPOWER	External USB 2.0 / eSATA Externally Powered. Delivery media prices include copying a complete image library onto media. Sub-warehousing extra. Applicable to County delivery.	\$0.00
1	Media Drive Capacity 931G - Drive Model 1T - EXTPOWER	External USB 2.0 / eSATA Externally Powered. Delivery media prices include copying a complete image library onto media. Sub-warehousing sold separately. Applicable to Consortium Partner deliveries and includes a copy of the applicable imagery.	\$750.00
1	Mosaic - Area Wide in Esri ArcGIS Raster Catalog	Orthogonal imagery delivered as ESRI Raster Catalog. To the extent Customer provides Pictometry with any non-Pictometry imagery, Customer represents and warrants that it has the necessary rights, power and authority to do so and authorizes Pictometry to use such non-Pictometry imagery.	\$10,000.00
1	Oblique Imagery Bundle with One (1) Year of EFS Maintenance & Support	Includes digital copy of the Licensed Documentation for the License Software, two (2) End User Training Sessions, one (1) Advanced User Technical Training, one (1) Administration / IT Training Session, five (5) hours of telephone support, one copy of Pictometry Electronic Field Study (EFS) software, latest version, on the storage media specified herein, and access to download updated versions of the EFS Licensed Software for a period of one years from the initial date of shipment of the EFS software, along with a copy of the updated documentation.	\$0.00
1	Pictometry Connect - CA - 1000	Pictometry Connect - CA - 1000 (Custom Access) provides up to 1000 concurrent authorized users the ability to login and access the Pictometry-hosted custom imagery libraries specified elsewhere in this Agreement via a web-based, server-based or desktop integration. The default deployment is through web-based Pictometry Connect. Term commences on date of activation.  <b>License Term:</b> 1 Year(s)	\$15,000.00 <sup>viii</sup>
1	Pictometry Connect - Early Access	Pictometry Connect - Early Access provides authorized users the ability to login and access imagery captured as part of a specific Project immediately following preliminary processing and quality control checks and prior to final processing of the imagery from the Project. Imagery will be posted to Pictometry Connect - Early Access incrementally as captured and processed, typically within two weeks following capture, and will remain available until final, fully processed imagery for the entire Project is made available through other access means. This offering requires purchase of imagery Project and an active Pictometry Connect Account.	\$0.00
1	Pictometry Connect - Third Party Sourced Orthomosaic	Processing of an existing single continuous third party orthomosaic for ingestion into Customer's Connect account as a discrete image library. This offering requires an existing	\$1,500.00

		third party orthomosaic, evidence satisfactory to Pictometry of copyright clearance for this use of the third party orthomosaic and an active Pictometry Connect account. Maximum library size may apply.	
1	Pictometry Connect View - CA	Pictometry Connect View - CA (Custom Access) provides visualization-only access to the Pictometry-hosted custom imagery libraries specified elsewhere in this Agreement via a web application or server based integration. Requires a customer-provided web application or server based application. With respect to imagery available through this product to third parties or the Public, Pictometry reserves the right to reduce the resolution of the imagery available. Term commences on date of activation. Term ends upon the earlier to occur of (i) the expiration of the term specified elsewhere in this Agreement, or (ii) the volume of geocode requests submitted through the application exceeding 10,000.  <b>License Term:</b> 1 Year(s)	\$500.00 <sup>ix</sup>
1	Pictometry CONNECTAssessment	Pictometry CONNECTAssessment allows a user the ability to log in and access Pictometry ChangeFinder data and Pictometry-hosted imagery libraries, which have been licensed to the Customer and specified elsewhere in this Agreement, via a web-based application. The number of concurrent authorized users is specified in Customer's existing Connect agreement. Access runs concurrent with last activation (and scheduled expiration) of the Customer's existing Connect account. This offering requires an active Pictometry CONNECT account.	\$0.00
1	Pictometry Gateway - CA	Pictometry Gateway - CA (Custom Access) provides web access to Pictometry-hosted custom imagery libraries via API for machine-to-machine access. Pictometry Gateway - CA retrieves for any location either the most recent imagery available for that location or, at the user's option, an alternative date or GSD for that location.  This product requires an active Pictometry Connect - CA account. A Pictometry Connect View - CA account is required for public access to the imagery. The custom imagery libraries available for access conforms to Customer's Pictometry Connect - CA account geofence.	\$2,000.00
1	RapidAccess - Disaster Response Program	RapidAccess - Disaster Response Program is an emergency response program offering flights after an emergency or disaster. See detailed description of the Disaster Response Program below. Available with purchase of imagery.	\$0.00 <sup>x</sup>

<sup>i</sup> Discounts can be applied based upon volume and continuity of the area to be modeled.

<sup>ii</sup> Pricing based upon the following tiers:

**Building Footprints & Change Detection Pricing**

<b>Parcels</b>	<b>Footprints</b>	<b>Change Detection</b>	<b>BOTH</b>
1-25,000	\$0.35	\$0.40	\$0.75
25,001-50,000	\$0.35	\$0.37	\$0.72
50,001-75,000	\$0.32	\$0.35	\$0.67
75,001-100,000	\$0.30	\$0.32	\$0.62
100,001-200,000	\$0.27	\$0.30	\$0.57
200,001-300,000	\$0.25	\$0.25	\$0.50
300,001-400,000	\$0.24	\$0.24	\$0.48
400,001-1,000,000	\$0.23	\$0.23	\$0.46
more than 1,000,000	\$0.22	\$0.22	\$0.44

<sup>iii</sup> Connect Image Service fee waived with annual imagery purchase.

<sup>iv</sup> Fee waived for two registrations for one-time FutureView attendance.

<sup>v</sup> Requires minimum purchase as set forth in the product description. Pricing for areas below the minimum will vary depending upon the scope of work.

<sup>vi</sup> Requires minimum purchase of 500 contiguous square miles. Pricing contingent upon simultaneous purchase of correspondencing CDO or CDO4 of the same area. Pricing for areas less than 500 contiguous square miles or without the correspondencing CDO or CDO4 purchase will vary depending upon the scope of work.

<sup>vii</sup> Requires minimum purchase of 500 contiguous square miles. Pricing contingent upon simultaneous purchase of correspondencing DEM of the same area. Pricing for areas less than 500 contiguous square miles or without the correspondencing DEM purchase will vary depending upon the scope of work.

<sup>viii</sup> Prices will vary for an increase in the number of concurrent users of Connect.

<sup>ix</sup> Fee waived for first year.

<sup>x</sup> **RapidAccess—Disaster Response Program (DRP)**

The County shall be eligible for Contractor’s Disaster Response Program (DRP) described below from the effective date through the second anniversary of the initial project delivery. Following payment to Contractor of amounts due with respect to each subsequent project, the County would be eligible for the then-current DRP for a period of two years from delivery of such subsequent project. The County must be in good-standing with Contractor to maintain eligibility for DRP.

A. Disaster Coverage Imagery at No Additional Charge – Contractor will, upon request of the County and at no additional charge, provide standard quality imagery of up to 200 contiguous square miles of affected areas (as determined by Contractor) upon the occurrence of any of the following events during any period the County is eligible for the DRP:

- Hurricane: areas affected by hurricanes of Category II and higher
- Tornado: areas affected by tornados rated EF4 and higher
- Terrorist: areas affected by damage from terrorist attack
- Earthquake: areas affected by damage to critical infrastructure resulting from earthquakes measured at 6.0 or higher on the Richter scale
- Tsunami: areas affected by damage to critical infrastructure resulting from tsunamis

B. Discounted Rate – Coverage for areas affected by the events set forth above exceeding 200 square miles shall be, subject to Contractor resource availability, offered to the County at the then current DRP rates. Also, coverage for areas affected by hurricanes below Category II, tornadoes below EF4 or earthquakes rated below 6.0 on the Richter scale shall be, subject to Contractor resource availability, offered to the County at the then current DRP rates. Weather and available aircraft permitting, disaster imagery of up to 200 contiguous square miles of areas of the County affected by floods shall be captured at a reduced cost during the Contract Term.

**PRODUCT PARAMETERS**

**IMAGERY**

**Product:** Existing Imagery  
*Elevation Source:* USGS  
*Leaf:* Less than 30% leaf cover (Off)  
*Special Instructions:* 2006 Data Set

**Product:** IMAGERY - NEIGHBORHOOD - 4-way (N5) (3in) Per Sector  
*Elevation Source:* USGS  
*Leaf:* Less than 30% leaf cover (Off)  
*Special Instructions:*

**Product:** IMAGERY - NEIGHBORHOOD - 4-way (N5) (4in) Per Sector  
*Elevation Source:* USGS  
*Leaf:* Less than 30% leaf cover (Off)  
*Special Instructions:*

**Product:** IMAGERY - NEIGHBORHOOD - 4-way (N5) (6in) Per Sector  
*Elevation Source:* USGS  
*Leaf:* Less than 30% leaf cover (Off)  
*Special Instructions:*

**CONNECT**

**Product:** Pictometry Connect - CA - 1000  
*Admin User:* David Moss  
*Admin User Email:* mossd004@mail.maricopa.gov  
*Requested Activation:* Upon Authorization  
*Special Instructions:*

**Product:** Pictometry Connect View - CA  
*Admin User:* David Moss  
*Admin User Email:* mossd004@mail.maricopa.gov  
*Requested Activation:* Upon Authorization  
*Special Instructions:*

*Geofence:* AZ Maricopa

**CONNECT-SERVER INTEGRATION**

**Product:** Pictometry Gateway - CA  
*Server Integration:* Gateway (Internal Only)  
*Special Instructions:*

**Product:** Integrated Pictometry Application  
*Server Integration:* IPA (Both Visualization & Analytics)  
*Special Instructions:*

*Technical Contact:* David Moss  
*Company Name:* Maricopa County, AZ  
*Phone Number:* (602) 506-5143  
*Email Address:* mossd004@mail.maricopa.gov

Eff. 08/18/2016 (see Amendment #1)

**EXHIBIT A  
PRODUCTS, PRODUCT DESCRIPTIONS, PRICING AND PRODUCT PARAMETERS &  
SPECIFICATIONS**

The following products, product descriptions, pricing, product parameters & specifications shall be added to Exhibit A of the Contract between Pictometry International Corp. and Maricopa County, dated October 21, 2015:

QTY	PRODUCT NAME	PRODUCT DESCRIPTION	PRICE
1	Survey Report - LiDAR - Tested To Accuracy Statement	Available with 'Survey - LiDAR Project NSSDA Compliant Independent Ground Control Survey'. Product Includes: Report signed/sealed by appropriately licensed surveyor. Report details production statistics and includes an NSSDA compliant "Tested To" accuracy statement.  Applicable Terms and Conditions: Order Form	\$2,000.00
1	LIDAR Hydro Enforcement Breaklines - Pictometry (sq mi)	Area wide polyline files in ESRI Polyline Feature Class format. Available with qualifying LiDAR purchase.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$55.00 <sup>xi</sup>
1	LIDAR DSM - Pictometry (sq mi)	Available with qualifying LiDAR purchase. Gridded first return DSM in ArcGIS GRID format. Refer to attached terms and conditions.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$35.00 <sup>xi</sup>
1	LIDAR Void, Slopes, Intensity Grids - Pictometry (sq mi)	Available with qualifying LiDAR purchase. Void area polygons in ESRI Polygon Feature Class Format. Gridded Slope and Intensity data in ArcGIS GRID format. Refer to attached terms and conditions.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$20.00 <sup>xi</sup>
1	LIDAR-First Return LAS/XYZ (sq mi)	Available with qualifying LiDAR purchase. Pictometry will create a copy of the original dataset containing all first return points in LAS (v1.2) and ASCII XYZI format. Two output files are created and delivered per input LAS tile: first return points in LAS format tiled in same schema as base deliverable data files; first return points in ASCII XYZI format tiled in same schema as base delivered data files.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$5.00 <sup>xi</sup>

1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (3in) Per Sector	Product includes: 3-inch GSD oblique frame images (4-way), 3-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.25 feet/pixel; Nominal Oblique GSD (all values +/-10%): Front Line: 0.24 feet/pixel, Middle Line: 0.28 feet/pixel, Back Line: 0.34 feet/pixel.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$405.00 <sup>xi xii</sup>
1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (4in) Per Sector	Product includes 4-inch GSD oblique frame images (4-way), 4-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.32 feet/pixel; Nominal Oblique GSD (all values +/-10%): Front Line: 0.33 feet/pixel, Middle Line: 0.36 feet/pixel, Back Line: 0.44 feet/pixel.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$360.00 <sup>xi xii</sup>
1	Mosaic - Area Wide (3in GSD; MrSID format; individual) Per Sector	Available with purchase of corresponding tile product. New processing or re-processing to MrSID of individual tiles of 3-inch GSD imagery. Tiles are provided "as is." Refer to Product Parameters for additional details.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$2.00 <sup>xi xiii</sup>
1	Mosaic - Area Wide (4in GSD; MrSID format; individual) Per Sector	Available with purchase of corresponding tile product. New processing or re-processing to MrSID of individual tiles of 4-inch GSD imagery. Tiles are provided "as is." Refer to Product	\$2.00 <sup>xi xiii</sup>

		Parameters for additional details.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	
1	Tiles - Standard (3in GSD; TIFF format) Per Sector	Available with corresponding 3" GSD imagery purchase. 3-inch GSD Mosaic Tiles in TIFF Format. Tiles are provided "as is." Refer to Product Parameters for additional details.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$10.00 <sup>xi</sup> <sup>xiii</sup>
1	Tiles - Standard (4in GSD; TIFF format) Per Sector	Available with corresponding 3" GSD or 4" GSD imagery purchase. 4-inch GSD Mosaic Tiles in TIFF Format. Tiles are provided "as is." Refer to Product Parameters for additional details.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$10.00 <sup>xi</sup> <sup>xiii</sup>

The following products, product descriptions, pricing, product parameters & specifications shall replace the corresponding products in Exhibit A of the Contract between Pictometry International Corp. and Maricopa County, dated October 21, 2015:

1	FutureView Advanced Training (Full 2017)	Full conference registration to advanced training designed to maximize deployment. Includes airfare, hotel room for up to three nights, event registration, and round-trip airfare up to \$500. Customer will be provided with discount code to complete FutureView registration. (Air Travel Restrictions - 30 day advance purchase for airfare, per person round trip airfare at standard coach class rates through Pictometry's travel provider only.) Must be redeemed within three years of agreement execution date.  Applicable Terms and Conditions: Order Form	\$2,499.00
1	FutureView Advanced Training (Conference Only 2017)	Conference registration to advanced training designed to maximize deployment. Includes event registration (no airfare or hotel). Must be redeemed within three years of agreement execution date.  Applicable Terms and Conditions: Order Form	\$699.00

<sup>xi</sup> Requires minimum purchase of 500 contiguous square miles.

<sup>xii</sup> Standard imagery product.

<sup>xiii</sup> Must be purchased in conjunction with standard imagery product.

**PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS**

**LIDAR HYDRO ENFORCEMENT BREAKLINES**

Pictometry will generate additional detailed hydrographic vector data from available digital imagery, elevation and vector GIS data. The reference data for this mapping effort will be the National Hydrography Dataset (NHD). The primary method for developing these data will be to map the location of the breaklines from the LiDAR data directly using best available aerial photography as a reference. The location of the edge of the water depends on seasonal water levels at the time of data collection. Water levels will be mapped according to levels indicated in the LiDAR data.

Additional hydrographic breaklines will be developed as follows:

- Stream Centerlines: For streams identifiable from the LiDAR data and/or the Orthophotography at a scale of 1:1000. These are commonly referred to as "single line streams" in NHD.
- Edge of Water: For streams with identifiable water 5m across or ponds exceeding 1 acre.

All stream center lines and edge of water lines will have monotonicity (continuous downward slope) enforced.

**DSM (REFLECTIVE SURFACE)**

Pictometry will convert the data contained in the LAS files to a raster based Digital Surface Model (DSM) representing a "first surface" detected by the sensor. This first surface is represented by both bare ground in open terrain, as well as the tops of trees and buildings in areas with significant non-ground features. The elevation value of each cell in the raster dataset will represent the highest elevation value of points that fall within that cell. This surface model will not include the development or use of additional breaklines beyond that which are included with the bare earth data.

**Deliverables:**

Collection-wide DSM in ArcGIS GRID format with 10 foot grid cell size unless otherwise specified by the Customer.

**Void Area Mapping**

Pictometry anticipates that there will be a range of void areas on the bare earth data as a result of non-ground feature removal or absorption by water. Pictometry will derive void area polygons from the Bare Earth point data. This ancillary deliverable is particularly useful for the Customer to have as a legacy of the collection to better understand and articulate the limitations and assumptions (i.e., interpolation) that are inherent in the derived data products. In accordance with both FEMA guidelines and the USGS Specifications, voids areas will be mapped as follows:

Data Type	Criteria
Bare Earth Data	≤10m GRID (100m <sup>2</sup> )
First Return Data	≤8m GRID (64m <sup>2</sup> )

FEMA guidelines indicate that void areas greater than one (1) acre occurring in the floodplains may require additional ground survey, independent of the overall collection statistics. As such Pictometry will attribute the land cover for Bare Earth void polygons larger than one acre. **Deliverable:** Collection-wide Void Area polygon data in ESRI Polygon Feature Class format.

**SLOPE DATA**

Pictometry will derive percent rise and degree slope GRIDs from the DEM data developed above. The extent will be the same as the source DEM with values for slope. **Deliverable:** Slope data in ArcGIS GRID format.

**INTENSITY DATA**

Pictometry will develop intensity grids from the data contained in the LAS files. This data is particularly useful for customers to use in urban planning and hydrologic applications such as evaluating land cover types, impervious surface areas and changes in the landscape. The data will be tiled to the original LiDAR tiles, in ESRI GRID format with a grid cell size corresponding to the average post spacing of the all points LiDAR data unless otherwise specified by the Customer. Pictometry will interpolate across voids unless the customer specifies otherwise. A raster catalog will also be included of all the tiles. **Deliverable:** Tiled Intensity data in ArcGIS Grid format unless otherwise specified. ESRI raster catalog of all the tiles.

## EXHIBIT A-APPENDIX 1

### PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS

#### Color Digital Orthophotography

##### Product Overview:

Seamless digital ortho-mosaic produced from individual frames and tiled to County's preferred tiling scheme. Specifications and deliverables as follows:

##### Acquisition:

Frame Overlap: 60% forward/30% side

Capture Window: solar elevation >30 degrees or most optimal 4-hour window

Environmental Conditions: ground free of snow cover; imagery free of clouds, fog, haze, smoke, and dust

Deciduous Vegetation: less than 30% full bloom

Camera System: Pictometry PentaView Sensor System; medium format configuration, dynamic range of 12 bits per band, RGB, resampled to 8 bits during processing

##### Ground Control:

Maricopa County to provide available existing control; Pictometry will augment as necessary to achieve specified accuracy.

##### Image Processing:

Aerial Triangulation: Pictometry will perform aerial triangulation utilizing post-processed exterior orientations, calibrated camera model(s), and specified ground control points as input to the aerial triangulation process. Aerial triangulation process to be performed using Trimble Inpho's Match-AT software.

Elevation Surface: Best available terrain model will be used to support orthorectification; if surface is found to be of insufficient accuracy/quality to support accuracy specifications, Pictometry will use an autocorrelated surface with limited manual editing to generate a surface to support generation of orthoimagery.

Orthorectification: Pictometry will use the triangulated exterior orientation values, calibrated camera interior orientation models, and the specified digital terrain model to perform the Orthorectification. When rectification requires a resampling of the source imagery, cubic convolution will be used.

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Mosaicking: Global color balancing will be applied to all orthophotos to create homogeneous orthophotos within the project area. Local adjustments of brightness values, color, and contrast will be performed if needed. There will be no obvious seam edge between two adjacent orthophotos. Mosaic will be created using automated seamline steering, with manual edits to eliminate feature misalignment caused by seamlines which pass thru features above the elevation surface. Feature alignment across seamlines will be 3 pixels or better. When possible, seamlines will be steered away from elevated features to improve orthophoto quality. Final mosaic will be tiled and named according to the agreed upon schema for delivery or as specified below.

Tiling Schema: Imagery will be tiled according to Customer provided file or agreed upon schema developed by Pictometry.

### Deliverables:

The following will be delivered in State Plane 1983, Arizona Central Zone, NAD83, in US Survey Feet:

(3, 4, or 6-inch) GSD ortho mosaic tiles (GeoTIFF format; according to specified tiling schema)

(3, 4, or 6-inch) GSD area-wide ortho mosaic (ECW format)

(3, 4, or 6-inch) GSD area-wide ortho mosaic (MrSID format)

FGDC compliant metadata

AT/Survey report

### Orthomosaic Accuracy:

3-inch GSD: RMSE(x or y) 0.75 ft; RMSE(r) 1.06 ft; NSSDA (95%) 1.84 ft; NMAS 1" = 50'/1:600;

4-inch GSD: RMSE(x or y) 1.00 ft; RMSE(r) 1.41 ft; NSSDA (95%) 2.45 ft; NMAS 1" = 64'/1:768;

6-inch GSD: RMSE(x or y) 1.30 ft; RMSE(r) 1.84 ft; NSSDA (95%) 3.20 ft; NMAS 1" = 84'/1:1000;

## EXHIBIT A-APPENDIX 2

### PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS

#### Color Digital Orthophotography

##### Product Overview:

Digital ortho-mosaic produced from individual frames and tiled to County's preferred tiling scheme Specifications and deliverables as follows:

##### Acquisition:

Frame Overlap: 60% forward/30% side

Capture Window: solar elevation >30 degrees; vegetation in leaf-off condition

Environmental Conditions: ground free of snow cover; imagery free of clouds, fog, haze, smoke, and dust

Camera System: Pictometry PentaView Sensor System; medium format configuration, dynamic range of 12 bits per band, RGB, resampled to 8 bits during processing

##### Image Processing:

Elevation Surface: Best available terrain model will be used to support orthorectification.

Orthorectification: Pictometry will use the exterior orientation values generated from the post-processed POS-INS solution (direct geo-registration), calibrated camera interior orientation models, and the specified digital terrain model to perform the Orthorectification. When rectification requires a resampling of the source imagery, cubic convolution will be used.

Mosaicking: Global color balancing will be applied to all orthophotos to create homogeneous orthophotos within the project area. Mosaic will be created using automated seamline steering only without manual editing.

Tiling Schema: Imagery will be tiled according to mutually agreed upon schema.

##### Deliverables:

The following will be delivered in State Plane 1983, Arizona Central Zone, NAD83, in US Survey Feet:

9-in GSD ortho mosaic images (3-band (RGB) GeoTIFF format; according to specified tiling schema)

9-in GSD project-wide ortho mosaic (ECW format & MrSID format)

FGDC compliant metadata

## EXHIBIT A-APPENDIX 3

### PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS

#### Color Digital Orthophotography

##### Product Overview:

Seamless, 4-band, digital ortho-mosaic produced from individual frames and tiled to County's preferred tiling scheme. Specifications and deliverables as follows:

##### Acquisition:

Frame Overlap: 60% forward/30% side

Capture Window: solar elevation >30 degrees or most optimal 4-hour window

Environmental Conditions: ground free of snow cover; imagery free of clouds, fog, haze, smoke, and dust

Deciduous Vegetation: less than 30% full bloom

Camera System: Pictometry PentaView Sensor System; medium format configuration, dynamic range of 12 bits per band, IRGB, resampled to 8 bits during processing

##### Ground Control:

Maricopa County to provide available existing control; Pictometry will augment as necessary to achieve specified accuracy.

##### Image Processing:

Aerial Triangulation: Pictometry will perform aerial triangulation utilizing post-processed exterior orientations, calibrated camera model(s), and specified ground control points as input to the aerial triangulation process. Aerial triangulation process to be performed using Trimble Inpho's Match-AT software.

Elevation Surface: Best available terrain model will be used to support orthorectification; if surface is found to be of insufficient accuracy/quality to support accuracy specifications, Pictometry will use an autocorrelated surface with limited manual editing to generate a surface to support generation of orthoimagery.

Orthorectification: Pictometry will use the triangulated exterior orientation values, calibrated camera interior orientation models, and the specified digital terrain model to perform the Orthorectification. When rectification requires a resampling of the source imagery, cubic convolution will be used.

Mosaicking: Global color balancing will be applied to all orthophotos to create homogeneous orthophotos within the project area. Local adjustments of brightness values, color, and contrast will be performed if needed. There will be no obvious seam edge between two adjacent orthophotos. Mosaic will be created using automated seamline steering, with manual edits to eliminate feature misalignment caused by seamlines which pass thru features above the elevation surface. Feature alignment across seamlines will be 3 pixels or better. When possible, seamlines will be steered away from elevated features to improve orthophoto quality. Final mosaic will be tiled and named according to the agreed upon schema for delivery or as specified below.

Tiling Schema: Imagery will be tiled according to Customer provided file or agreed upon schema developed by Pictometry.

Deliverables:

The following will be delivered in State Plane 1983, Arizona Central Zone, NAD83, in US Survey Feet:

(3, 4, or 6-inch) GSD four-band (R,G,B,NIR) ortho mosaic tiles (GeoTIFF format; according to specified tiling schema)

(3, 4, or 6-inch) GSD four band frame imagery without color balance applied (TIF/TFW format)

(3, 4, or 6-inch) GSD area-wide ortho mosaic (RGB, ECW format)

(3, 4, or 6-inch) GSD area-wide ortho mosaic (RGB, MrSID format)

(3, 4, or 6-inch) GSD area-wide ortho mosaic (CIR, ECW format)

(3, 4, or 6-inch) GSD area-wide ortho mosaic (CIR, MrSID format)

FGDC compliant metadata

AT/Survey report

Orthomosaic Accuracy:

3-inch GSD: RMSE(x or y) 0.75 ft; RMSE(r) 1.06 ft; NSSDA (95%) 1.84 ft; NMAS 1" = 50'/1:600;

4-inch GSD: RMSE(x or y) 1.00 ft; RMSE(r) 1.41 ft; NSSDA (95%) 2.45 ft; NMAS 1" = 64'/1:768;

6-inch GSD: RMSE(x or y) 1.30 ft; RMSE(r) 1.84 ft; NSSDA (95%) 3.20 ft; NMAS 1" = 84'/1:1000;

## EXHIBIT A-APPENDIX 4

### PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS

#### Color Digital Orthophotography

##### Product Overview:

Seamless, 4-band, digital ortho-mosaic produced from individual frames and tiled to County's preferred tiling scheme. Specifications and deliverables as follows:

##### Acquisition:

Frame Overlap: 60% forward/30% side

Capture Window: solar elevation >30 degrees; vegetation in leaf-off condition

Environmental Conditions: ground free of snow cover; imagery free of clouds, fog, haze, smoke, and dust

Camera System: Pictometry PentaView Sensor System; medium format configuration, dynamic range of 12 bits per band, IRGB, resampled to 8 bits during processing

##### Image Processing:

Elevation Surface: Best available terrain model will be used to support orthorectification.

Orthorectification: Pictometry will use the exterior orientation values generated from the post-processed POS-INS solution (direct geo-registration), calibrated camera interior orientation models, and the specified digital terrain model to perform the Orthorectification. When rectification requires a resampling of the source imagery, cubic convolution will be used.

Mosaicking: Global color balancing will be applied to all orthophotos to create homogeneous orthophotos within the project area. Mosaic will be created using automated seamline steering only without manual editing.

Tiling Schema: Imagery will be tiled according to mutually agreed upon schema.

##### Deliverables:

The following will be delivered in State Plane 1983, Arizona Central Zone, NAD83, in US Survey Feet:

(9-inch) GSD four-band (R,G,B,NIR) ortho mosaic tiles (GeoTIFF format; according to specified tiling schema)

(9-inch) GSD four band frame imagery without color balance applied (TIF/TFW format)

(9-inch) GSD area-wide ortho mosaic (RGB, ECW format)

(9-inch) GSD area-wide ortho mosaic (RGB, MrSID format)

(9-inch) GSD area-wide ortho mosaic (CIR, ECW format)

(9-inch) GSD area-wide ortho mosaic (CIR, MrSID format)

## EXHIBIT A-APPENDIX 5

### PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS

#### LiDAR

##### LiDAR 1.0 m

This section describes the operational parameters of the ALTM Gemini that Pictometry intends to set for collection of data. Actual collection parameters may vary due to weather conditions and/or air traffic control (ATC) restrictions. Pictometry stipulates the final accuracy of the dataset regardless of actual capture parameters.

##### Capture Parameters (nominal) – 1.0 m postings

Flight Altitude:	1800m/5900ft
Point Spacing:	1.0m
Point Density:	1 point per square meter
Pulse Repetition Freq.:	100kHz
Scan Angle (+/-):	16.9 degrees
Scan Frequency:	42.1Hz
Swath Width:	1100m/3600ft
Overlap:	30%
Vertical Accuracy:	15 cm RMSE <sub>z</sub> bare earth 30 cm NSSDA Vertical Accuracy (95% confidence) – bare earth
Horizontal Accuracy:	35cm; RMSE
Returns:	Up to four per pulse
Intensity records:	Recorded for each return
Coordinate System:	Customer preferred system and units (must be specified and approved in advance of start of work).
Filtering:	Automated methods with manual review and clean up with the following minimum performance specifications: <ul style="list-style-type: none"> <li>• 95% of outliers removed</li> <li>• 95% of vegetation removed</li> <li>• 98% of buildings removed</li> </ul>
Contour Interval	Meets or exceeds FEMA requirements to generate contours at a 2' interval. <b>NOTE:</b> While Pictometry stipulates this accuracy, independent verification of this accuracy as well as additional independent reporting is usually required to qualify for FEMA funding. Pictometry offers these services through an independent subcontractor for additional cost.

##### Deliverables:

- LiDAR Data
  - Tiled\* LAS v1.2 files including Return Number and Intensity attribute for each return
    - Duplicate points and 95% of outliers removed

- Ground points classified via automated methods with manual review and clean up
  - 95% of vegetation features removed
  - 98% of buildings removed
- Buildings and vegetation not classified separately
- **NOTE:** LiDAR data deliverables will extend approximately 200m beyond the specified project area
- Raw GPS/INS data and laser range files with supporting information
- FGDC compliant metadata
- Estimated Data Sizes (at 1.0m point spacing): 10-12 GB per 100 square miles  
(approximate)

**LiDAR 0.7 m**

This section describes the operational parameters of the ALTM Gemini that Pictometry intends to set for collection of data. Actual collection parameters may vary due to weather conditions and/or air traffic control (ATC) restrictions. Pictometry stipulates the final accuracy of the dataset regardless of actual capture parameters.

**Capture Parameters (nominal) – 0.7 m postings**

Flight Altitude:	760m/2500ft
Point Spacing:	0.7m
Point Density:	2 points per square meter
Pulse Repetition Freq.:	70kHz
Scan Angle (+/-):	15.8 degrees
Scan Frequency:	56Hz
Swath Width:	430m/1400ft
Overlap:	30%
Vertical Accuracy:	9.25 cm RMSE <sub>z</sub> bare earth  18.2 cm NSSDA Vertical Accuracy (95% confidence) – bare earth
Horizontal Accuracy:	25cm; RMSE
Returns:	Up to four per pulse
Intensity records:	Recorded for each return
Coordinate System:	Customer preferred system and units (must be specified and approved in advance of start of work).
Filtering:	Automated methods with manual review and clean up with the following minimum performance specifications: <ul style="list-style-type: none"> <li>● 95% of outliers removed</li> <li>● 95% of vegetation removed</li> <li>● 98% of buildings removed</li> </ul>
Contour Interval	Meets or exceeds FEMA requirements to generate contours at a 1' interval. <b>NOTE:</b> While Pictometry stipulates this accuracy, independent verification of this accuracy as well as additional independent reporting is usually required to qualify for FEMA funding. Pictometry offers these services through an independent subcontractor for additional cost.

**Deliverables:**

- LiDAR Data
  - Tiled\* LAS v1.2 files including Return Number and Intensity attribute for each return
    - Duplicate points and 95% of outliers removed
  - Ground points classified via automated methods with manual review and clean up
    - 95% of vegetation features removed

- 98% of buildings removed
  - Buildings and vegetation not classified separately
  - **NOTE:** LiDAR data deliverables will extend approximately 140m beyond the specified project area
- Raw GPS/INS data and laser range files with supporting information
- FGDC compliant metadata
- Estimated Data Sizes (at 0.7m point spacing): 20-25GB per 100 square miles (approximate)

**LiDAR 0.5 m**

This section describes the operational parameters of the ALTM Gemini that Pictometry intends to set for collection of data. Actual collection parameters may vary due to weather conditions and/or air traffic control (ATC) restrictions. Pictometry stipulates the final accuracy of the dataset regardless of actual capture parameters.

**Capture Parameters (nominal) – 0.5 m postings**

Flight Altitude:	500m/1600ft
Point Spacing:	0.5m
Point Density:	4 points per square meter
Pulse Repetition Freq.:	50kHz
Scan Angle (+/-):	10.1 degrees
Scan Frequency:	70.1Hz
Swath Width:	177m
Overlap:	N/A
Vertical Accuracy:	9.25 cm RMSE, bare earth 18.2 cm NSSDA Vertical Accuracy (95% confidence) – bare earth
Horizontal Accuracy:	35cm; RMSE
Returns:	Up to four per pulse
Intensity records:	Recorded for each return
Coordinate System:	Customer preferred system and units (must be specified and approved in advance of start of work).
Filtering:	Automated methods with manual review and clean up with the following minimum performance specifications: <ul style="list-style-type: none"> <li>• 95% of outliers removed</li> <li>• 95% of vegetation removed</li> <li>• 98% of buildings removed</li> </ul>
Contour Interval	Meets or exceeds FEMA requirements to generate contours at a 1' interval. <b>NOTE:</b> While Pictometry stipulates this accuracy, independent verification of this accuracy as well as additional independent reporting is usually required to qualify for FEMA funding. Pictometry offers these services through an independent subcontractor for additional cost.

**Deliverables:**

- LiDAR Data
  - Tiled\* LAS v1.2 files including Return Number and Intensity attribute for each return
    - Duplicate points and 95% of outliers removed
  - Ground points classified via automated methods with manual review and clean up
    - 95% of vegetation features removed

- 98% of buildings removed
    - Buildings and vegetation not classified separately
    - **NOTE:** LiDAR data deliverables will extend approximately 200m beyond the specified project area
  - Raw GPS/INS data and laser range files with supporting information
  - FGDC compliant metadata
  - Estimated Data Sizes: 40-50 GB per 100 square miles (approximate)

**DEM Bare Earth**

**ESRI Terrain**

Pictometry will convert the Bare Earth classified data contained in the LAS files to ESRI Terrain data as a fundamental step toward deriving subsequent bare earth terrain products. Developing the data in this manner will significantly enhance the delivery of data to the Customer and provide maximum flexibility for future use, updates, and edits. **Standard Hydrographic Breaklines (described below) will be incorporated into all terrain deliverables.** Additional breaklines may be developed and incorporated into the terrain at any time.

**Digital Elevation Models (DEMs)**

The standard DEM deliverable will be assumed to have a 10-foot grid cell size unless otherwise specified by the customer. Pictometry will also develop a Hillshade from the DEM for visualization and cartographic mapping purposes.

**Standard Hydrographic Breaklines**

Breaklines are linear features that describe a change in the smoothness or continuity of a surface. As part of the baseline effort to create a DEM, Pictometry will develop limited 3D breaklines for water feature boundaries and wide rivers and incorporate those into the ESRI Terrain data prior to generating any derived products. Hydrographic breaklines will be delineated using the LiDAR data with elevation values assigned from the LiDAR data, using best available aerial photography and the National Hydrography Dataset (NHD) as references.

Water bodies will be defined for the purposes of this task as being larger than 5m across, or greater than one (1) acre. Breaklines delineating the edge of water will be created for all such water bodies. Breaklines will not be developed for streams less than 5m across, also referred to in NHD as 'single line streams'.

The standard for water bodies in the USGS Specification is 100ft and two (2) acres respectively. 'Hydro-flattening', as defined in the USGS Specification, will be completed at a minimum on all water bodies meeting the USGS definition. This task is intended to meet or exceed the requirements for 'Hydro-flattening' in the USGS Specification.

For flat and level water bodies (ponds, lakes), a single elevation value will be assigned to the entire polygon and/or to every bank vertex. The entire water surface edge will be at or just below the immediately surrounding terrain. For streams and rivers, breaklines indicating flat and level bank-to-bank conditions (perpendicular to the apparent flow centerline) will be created, with the gradient along the bank to follow the immediately surrounding terrain. Monotonicity will be enforced on breaklines meeting the USGS Specification. Stream and river breaklines delineating the edge of water will stop at road crossings (i.e., culvert locations).

Bare earth LiDAR points that are within the design Nominal Point Spacing (NPS) of a breakline will be re-classified as 'Ignored Ground' once the breaklines have been completed. The design NPS of a LiDAR collection is typically between 1 and 2 meters, but may be greater or less depending on the collection specifications of the project.

The identification and prioritization of additional breaklines beyond those minimally described here represents a wide range of expectations and detail depending on specific project/customer needs and intended uses. Most customized uses of breaklines are appropriate for project specific purposes, such as hydraulic modeling, construction site design or transportation engineering. As such, additional breakline development options are offered below. Additional detailed breaklines can be developed and incorporated into the terrain data at any time.

**Deliverables:**

Collection-wide point data (bare earth only) in ESRI multi-point format

Collection-wide Terrain Data Model (bare earth) in ArcGIS TERRAIN format

Collection-wide Digital Elevation Model (bare earth) in ArcGIS GRID format

Collection-wide polyline files in ESRI Polyline Feature Class format

Collection-wide Hillshade of the Bare earth DEM in ArcGIS format

**Contours**

## **SERIAL 15056-RFP**

The range of available algorithms can result in significant differences in cartographic output quality for the generation of topographic contours. Some methods more accurately represent the point data, but result in a more angular and less cartographically pleasing output. Other methods will smooth the data to varying degrees but produce a much higher quality cartographic output. The customer will be given options, based on demo data, for having their collection area contours created from smoothed data or not-smoothed data.

This task will result in vector (line) data and as such, tiling the data will be required because the vector files can be quite large. The output tiling scheme will correspond to the LiDAR tiles unless the customer requests a different tiling scheme in advance. Final tiled vector data will be seamless and free of edge effects. Pictometry will establish elevation attributes to each contour line and identify 10, 20, and 50 ft. index contours unless otherwise specified by the Customer.

### **Deliverables:**

Tiled 1-foot or 2-foot\* contour files in ESRI Polyline Feature Class format. (\*NOTE: Contours will be created at maximum resolution supported by the collection as specified in Section A.)

## EXHIBIT A - APPENDIX 6

### PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS

#### LiDAR Based Mapping

Product Overview:

Product includes additional classification of LiDAR data to meet USGS QL2 guidelines. Final classification will include the following classed and designations:

<b>Code</b>	<b>Description</b>
1	Processed, but unclassified.
2	Bare earth.
7	Low noise.
9	Water.
10	Ignored ground (near a breakline).
17	Bridge decks.
18	High noise.

**EXHIBIT A**

**APPROVED SUBCONTRACTOR PRICING, PRODUCTS, PRODUCT DESCRIPTIONS & PARAMETERS**



External Data Quality Control

Price Proposal			
Number	Description	Deliverable	Price
1	QA/QC Plan	Microsoft Project and PDF	\$ 4,032.00
2	Review 100% of Orthophotography – Option 1 – 0.80 foot pixel (6610.20 square miles)	Status Reports and Issue File	\$97,911.50
3	Review 100% of Orthophotography – Option 2 – 0.32 foot pixel (2712.66 square miles)	Status Reports and Issue File	\$63,236.77
4	Review 100% of Orthophotography – Option 3 – 0.25 foot pixel (2712.66 square miles)	Status Reports and Issue File	\$75,715.30
5	Review of Oblique Imagery (coverage and accuracy) – All options	Status Reports and Issue File	\$14,384.53
6	In Person Meeting (Optional)	Meeting Notes	\$ 1,530.00
Total Costs			
<b>Option 1</b> (QA/QC Plan, Review 100% of Orthophotography – Option 1 – 0.80 foot pixel for 6610.20 square miles, Review of Oblique Imagery for coverage and accuracy, In person meeting at Maricopa County)			<b>\$117,858.03</b>
<b>Option 2</b> (Review 100% of Orthophotography – Option 2 – 0.32 foot pixel for 2712.66 square miles)			<b>\$63,236.77</b>
<b>Option 3</b> (Review 100% of Orthophotography – Option 3 – 0.25 foot pixel (2712.66 square miles)			<b>\$75,715.30</b>

Dewberry shall perform a 100% QC of the aerial imagery deliverables. A macro review of the oblique deliverables shall be conducted to ensure coverage and accuracy only.

Dewberry shall perform one (1) 100% review of the deliverables and up to two (2) reviews of corrections.

Dewberry shall not be collecting any independent QAQC checkpoints for the imagery or obliques. Dewberry shall have included cost to perform the accuracy assessment based on checkpoints provided by Pictometry.

Dewberry shall require approximately 8-10 weeks to perform the full review of the Orthoimagery. If the imagery is delivered in blocks, the review shall be performed on those blocks with a schedule negotiated for each block.

If Pictometry requires an in person meeting in with Maricopa, an additional cost (as shown in the table above) will be required. All travel costs for these meetings are subject to final reimbursement pursuant to Exhibit C.



### External Data Quality Control

Maricopa County and its consortium partners requires an experienced QA/QC contractor to review the data collected under the 2015 acquisition contract. Dewberry as a partner to Pictometry has the experience, processes, and resources to meet the needs of Maricopa County.

Dewberry’s project approach shall demonstrate that it has existing processes to QA/QC the products for Maricopa County. Dewberry understands the unique challenges an urban environment presents for the ten tiles that are significantly impacted by building lean and shall make sure sidewalks and pedestrian right-of-ways are not obstructed. For similar projects in Los Angeles, California; Baltimore, Maryland; and Gwinnett, Georgia; Dewberry leverages Google’s StreetView and oblique imagery and shall apply that process for Maricopa County.

Dewberry has experience providing QA/QC for imagery and planimetric data. It has completed over 570,000 square miles of similar QA/QC review for statewide and jurisdiction QA/QC programs across the nation, locations listed in Table 1.

QA/QC Program	Locations
Statewide Programs	Alaska, Indiana, Kansas, Massachusetts, Mississippi, North Carolina, Pennsylvania, South Carolina, Vermont, Virginia
Jurisdiction Programs	Prince Georges County, MD; Baltimore County, MD; District of Columbia; Fairfax County, VA; Los Angeles County, CA

*Table showing Dewberry's extensive involvement in QA/QC programs across the nation*

For its QA/QC projects, Dewberry takes specific client guidelines and adjusts its existing QA/QC processes, resulting in a tailored quality product based on client specifications. Dewberry’s experience is current – with Pictometry clients in Los Angeles and Prince Georges County expected to be complete this year. Maricopa can have confidence that contracting with Pictometry and Dewberry shall result in high quality products to maximize the return on investment for the imagery and planimetric data.

**WHY DEWBERRY?**

- Experienced team with similar projects will result in highest quality products
- Experience working with Pictometry on similar projects.
- Will customize our processes, used to complete over 570,000 square miles of QA/QC review across the nation, to meet the District's needs

Not only is Dewberry's experience current, the company has experience performing QA/QC review on products produced by Pictometry on LARIAC, and SACOG. Dewberry is dedicated to the success of this Maricopa County project and understands the value of these geospatial products for all stakeholders.  
The QA/QC Team

Dewberry's team is structured to provide Pictometry and Maricopa with the best possible resources to validate the 2015 imagery data to provide the highest quality product. The company's Project Manager, David Maune, has over 40 years of working on various geospatial projects throughout the US.

Josh Novac shall support Dr. Maune as the technical lead for the project and shall oversee the development of the quality plan and all reviews. Mr. Novac is currently finalizing the QA/QC review of orthophotography for the City of Los Angeles that was produced by Pictometry and was the project manager for the Sacramento Regional Council of Governments Orthoimagery project also produced by Pictometry

Dewberry has the available resources to meet the project schedule with geospatial analysts that have experience working on similar QA/QC projects across the nation.

### *Proposed Approach*

To enable Dewberry's QA/QC processes, the company has developed an ANSI/ISO/ASQ Q9001 - 2008 compliant Quality Management System (QMS) to thoroughly review large volumes of data quickly and cost effectively, and it is working towards ISO certification by the end of 2015. To create cost effective solutions when dealing with quality assessments, Dewberry automates data validations when possible and spends the necessary time to perform detailed, manual (visual) qualitative assessments. Although available software solutions are used, rarely are they used "as-is" out of the box. Instead, they are customized and they thereby enhance and continually improve the software to perform Dewberry's detailed quality reviews more efficiently and consistently.

Dewberry's quality control procedures have been defined and documented within its QMS (Figure 1) which details universal quality standards and principles that have been successfully applied to its local, state, and federal contracts since 1998. For Dewberry's QA/QC of imagery, ArcGIS 10 software is used (for which Dewberry) have an Enterprise License Agreement with Esri for unlimited use) to include the following:

- ArcGIS 3D Analyst
- ArcGIS Spatial Analyst
- Data Reviewer for  
ArcGIS
- Python

Dewberry shall use proven QA/QC processes and workflows throughout the entirety of this project. These shall also be detailed within the quality plan that shall be provided as part of the project deliverables. Dewberry consistently uses innovative and automated means where possible to more quickly and thoroughly review imagery but also relies on skilled geospatial professionals to perform final manual reviews of the data. To meet Maricopa's needs, Dewberry shall apply its technology, proven business processes, and trained staff these specifications to effectively perform the QA/QC review to meet the aggressive schedule.

## *Communication*

Mr. Novac shall coordinate directly with Pictometry and Maricopa on all services, including meetings, schedules, deliverables, project issues, conference calls, and correspondence. He shall initiate a weekly conference call and/or project meeting among key personnel from all organizations on a continuous basis throughout the project duration. Implementing this practice will:

- Allow for discussion of project related issues
- Mitigate potential scoping issues
- Promote project communication
- Foster team unity and communication
- Coordinate project understanding
- Help identify any production and quality control issues
- Allow management team to be proactive vs. reactive

In order to establish clear, concise project goals, deliverables, and schedules, the Dewberry Team shall incorporate work management and cost control procedures that have been established to specifically handle the flow of work with multiple assignments across the team.

Dewberry's partnership approach to communication shall closely bond Dewberry's project team, Pictometry, and Maricopa. Together, this team shall build consensus, discuss the status of projects and technical issues, and perform quality audits throughout the project in support of all services and products. Good communication is invaluable, but if that information is not properly disseminated to the appropriate team members, it fails to meet its objectives.

## *Develop QA/QC Project Plan and Procedures*

Upon award of a contract, Dewberry shall work with Pictometry and Maricopa to create a detailed quality plan that covers the independent quality assurance processes and procedures for the project. This quality plan shall become the basis for all quality assurance procedures undertaken during the project. Dewberry has significant experience in creating quality control plans for complex projects involving imagery and planimetric data collection. The quality plan shall be structured into the following elements as required by the RFTOP:

- Overview of the Quality Procedures – This details the types of checks being performed and the software that shall be used to review the data. This also includes an overview of the management and communication process.
- Background Objectives
- Communication Plan
- Error Reporting – Dewberry shall develop a shapefile with the attributes as listed in the RFP for reporting errors. Along with the shapefile showing specific locations Dewberry shall also provide a report with examples of the errors.
- Resolution Procedures
- Data Review Workflows - Workflows for validating the data including checklists that shall be used throughout the project.

- Acceptance Procedures – The section shall outline the “one pass” QC cycle as briefly explained on the next page.
- Project Schedule – The final project schedule shall be based on the Pictometry delivery schedule with specific timelines for QA/QC, correction, and final validation.

The team assembled by Dewberry to oversee and execute this project have substantial experience in working with Maricopa and other clients to develop comprehensive quality plans to ensure compliance with their specifications. Most recently, Dewberry worked with the Maryland National Capital Parks and Planning Commission (M-NCPPC) to develop a quality plan to review multispectral imagery (RGB, NIR), LiDAR, and planimetric data.

Dewberry shall use a “one pass” QA/QC process in the review for each of the imagery deliverables outlined in the RFP. There are a number of items that are consistent in the QC process regardless of the deliverable such as the “one pass” QC approach and the method for creating and delivering the shapefile of edit calls. As such, those items are covered first with specific details relating to the product deliverables following.

### *“One Pass” QC*

The “one pass” review cycle is designed to alleviate the production bottleneck that can be caused with iterative cycles of product rejection to resolve minor discrepancies in the deliverables. This approach is a direct result of lessons learned on projects with a similar scope.

The goal of this review process is to ensure that the final accepted database passes through rigorous review cycles designed to identify critical failures. Critical failures are defined as problems with compilation (either omission or incorrect representation) of features. Dewberry recognizes the potential for features to miss detection and capture during the stereo compilation phase due to the complex nature of the compilation process. The work flow process for the “one pass” review cycle is as follows:

- Dewberry shall perform a comprehensive quality evaluation of the initial data delivery. This evaluation shall identify all failures, discrepancies and systematic errors as defined by the acceptance criteria.
- It is expected that Pictometry shall address all “one pass” discrepancies regardless of the overall percentage of feature acceptance for features. If there are discrepancies, those shall need to be reviewed one at a time to build a team consensus.
- Upon redelivery, Dewberry shall perform a second review validating that the original edit calls were addressed and that no new errors have been introduced during this process.

Upon finalization of the review process, Dewberry shall create a report to accompany the edit calls shapefile documenting the review process and any issues identified with the data. This is submitted to Pictometry and Maricopa along with the edit calls shapefile as the deliverable for the review process.

### *Aerial Photography Review*

Dewberry’s approach to aerial photography quality assurance involves both manual and automated steps. Dewberry first performs a data inventory to ensure that all of the required files have been submitted and that formatting of the files matches the requirements for the project. The flight plans and logs are reviewed for compliance to the project specifications with a focus put on time of day,

overlap, and any other items required for reporting. At this time the GeoTIFF header information is also validated to ensure that all tiles have the correct spatial referencing information, correct number of rows and columns, and have the correct pixel size.

The initial checks are performed using automated scripts to ensure that no significant issues are present prior to performing a manual review of the data. If these checks pass or if the issues present shall not impact the ability to perform the manual review, the manual review shall begin. The manual review process that Dewberry employs has been used on tens of thousands of square miles of imagery over the past five years and runs in an ArcGIS platform. It's designed to be as efficient as possible while providing a 100 percent review of the data at an appropriate scale. During this process the imagery shall be loaded into a mosaic dataset which enables the QC analyst to have all of the imagery loaded in the map simultaneously. This method ensures that slivers, gaps, and misalignments are being reviewed between tiles.

The QC analyst shall then pan through the imagery with a 10 percent overlap on each frame and place edit calls at all locations where the imagery does not meet the required specifications. Because this project contains both a natural color deliverable and a color infrared deliverable, these shall be reviewed simultaneously during this process to improve the overall efficiency of the project. The types of issues being reviewed shall include all as outlined in the task order, as well as the final acceptance criteria developed as part of this project. The types of issues, depicted in Figures 2-4, shall include, but are not limited to, the following:

- Misalignment of features
- Digital artifacts
- Excessive shadow
- Radiometric and tonal imbalance
- Glare (dry, wet)
- Too bright
- Too dark
- Smearing, warping, or distortion of features
- Ghosting or disappearing structures
- Collapsed bridges
- Voids or missing imagery or data
- Artificial colorations.

For each of these issue types, a more detailed description shall be included in the quality plan and shall reflect the needs of Maricopa.

### *Artifacts or Image Blemishes*

Artifacts are image irregularities that shouldn't be there. With film, artifacts may include scratches, dust marks, scanning errors, pixelation, and other blemishes that do not appear to be natural. With digital imagery, artifacts might look like the examples in the figures below. Sometimes artifacts appear in the original image, but the client wants them removed anyhow. Water bodies and moving objects are especially difficult to control. Generally, the controlling factor is whether the imagery is usable for its intended purpose, or does not raise questions by users.



***Echo or Ghosting***



***Severe Distortion***

### *Conduct Testing During Pilot Phase and Provide Final Plan*

During the pilot phase the quality plan shall be revised or improved as necessary to support Maricopa and Pictometry and ensure all processes are well defined and being consistently followed. Any changes shall be discussed and agreed upon prior to performing the full revision of the QA/QC plan. The final

QA/QC plan shall be delivered to DC OCTO and shall used for the duration of the project.



### *Administer Full QA/QC Services for Production Phase*

Dewberry shall execute the full QA/QC of the project using the information gained from the pilot and revisions to the quality plan. A final project schedule shall be developed upon award of the project and shall be consistent with the needs of Maricopa County. The final schedule

shall reflect time for initial review, revisions, and validation of revisions to ensure that all time is being accurately captured.

All edit calls shall be stored in the edit call geodatabase as described earlier in the proposal. Once the imagery has been revised by the contractor, Dewberry shall perform a secondary review that validates the previous edit calls.

Dewberry understands the challenges of collecting and processing imagery in an urban environment such as the DC area and shall pay special attention to items such as building lean to ensure they do not impede the ability of the viewer to see transportation features or pedestrian walkways.

### *Error Reporting*

Dewberry shall provide a detailed process workflow for identifying, reporting, and providing guidance to resolve discrepancies that are identified by Dewberry during the QA/QC process. To support this process Dewberry shall develop an edit call shapefile and shall incorporate this information into reports that provide pass/fail metrics for each of the acceptance criteria.



Planimetrics

<b>Planimetrics</b>	Base Year (if Update to Existing)	Sq. Mi.	\$ 302.09	\$ 2,786,481
	Base Year (if Complete Recollection)	Sq. Mi.	\$ 813.06	\$ 7,499,668
	Option Year 1 (Annual Update)	Sq. Mi.	\$ 148.48	\$ 1,369,593
	Option Year 2 (Annual Update)	Sq. Mi.	\$ 152.93	\$ 1,410,656
	Option Year 3 (Annual Update)	Sq. Mi.	\$ 157.54	\$ 1,453,126
	Option Year 4 (Annual Update)	Sq. Mi.	\$ 162.26	\$ 1,496,716

*\*This optional pricing valid should the County decide to update an existing planimetric dataset, contrary to the County’s answer in their Vendor Questions and Answers.*

**A. Planimetrics**

Intergraph Services Company (ISC) provides high quality and cost-effective mapping, charting, planimetric and imagery products for government and commercial customers. From data collection to hardcopy output, ISC has provided best value, end-to-end mapping services since 1995.

*Project Assumptions*

- All planimetric data becomes the exclusive property of Maricopa County and its consortium partners
- The Area of Interest (Maricopa County) comprises 9,224 square miles: 72% is rural, 15% suburban/- semi-urban and 13% urban
- Per Maricopa’s Q&A response, Maricopa County requires a **complete recollection** of the vector dataset (GIS database) of planimetric features listed
- Optional pricing is provided should Maricopa County discover it does have existing planimetric features corresponding to the desired dataset and these features are to be updated (vs. a complete recollect)
- GIS feature schema to be collected is limited to those features identified in RFP 2.15.1, with no attribution
- *Disturbed Areas* “(P) stands for painted feature” (RFP 2.15.1) is not actually a feature but is, instead, a description meant to clarify the dataset
- *Trails* feature does not include *foot trails*
- *Water* features do not include *dry creek beds*
- *Canopies* do not include *non-permanent structures*
- *Stairways* shall be captured only if they are large, significant, on the exterior of the structure and comprise at least 10 or more steps

- *Earthen Dams* shall be collected only when they create a reservoir or other artificial body of water behind them
- *Rock Outcrops* and *Boulders* shall be collected only when they present a significant feature in the landscape that deviates notably from the surrounding topography
- *Windmill* category does not include power-generating wind turbines
- *Utility Coverages* - planimetric collection of Manholes, Catch Basins, Fire Hydrants, and Traffic Signals shall require 3" imagery as source
- *Traffic Signal Poles* shall be collected from 3" imagery. Collection shall include *Pedestrian Crosswalk* direction poles
- *Water Valves* shall be collected from 3" imagery. Collection shall consist of a point feature identified by metal cover in the street footprint
- *Light Poles* shall be collected from 3" imagery. Public poles along public roads shall be identified and collected as a point feature

### Overall Methodology

Working within a fully digital environment, ISC shall digitize planimetric features meeting ASPRS Class 1 for 1"=100' scale accuracy within a robust image display capability. The features identified in RFP Section 2.15.1 shall be extracted per the table below:

<b>Paved &amp; Unpaved Surfaces</b>	<b>Water Features</b>
Roads (go to more than 1 res.)	Lakes (> 4 acres)
Shoulders	Rivers (named on quad)
Driveways	Streams/Creeks (> 10' wide)
Parking	Concrete Drain
Concrete	Ponds (> .25 acre)
Alleys	Reservoirs
Sidewalk - Private & Public (both sides)	Ditches (man-made, not along roads)
Trails	Marsh/Swamp
<b>Structures</b>	Beach
Buildings (10' x 10')	<b>Water Structures</b>
Ruins (10' x 10')	Bridges
Decks >100 sq. ft.	Dams
Patios > 100 sq. ft.	Earth Dam

Canopies > 100 sq. ft.	Piers
Tanks	Breakwater
Propane Tanks	Wall
Silos	Culverts(small<20'in Length
Bunkers	Culverts(large>20' in Length
Foundations (> 100 square feet)	<b>Landmarks</b>
Smokestacks	Golf Course outline
Water Towers	Greens
Stairway	Tees
Pools (below ground)	Sand Traps
Pools (above ground)	Public Playgrounds
Windmill	Athletic Fields
<b>Barriers</b>	Open Storage
Fences	Cemeteries
Guard Rails	Tennis Courts
Walls	Public Parks
Retaining Walls	<b>Street Hardware</b>
Rock Walls	Large Overhead Signs
<b>Utilities</b>	Billboards
Manholes (P)	Bus Stop Shelters
Catch Basins (P)	<b>Vegetation</b>
Fire Hydrants (P)	Tree Outlines
Water Valves (P)	Single Trees (> 10' canopy)
Traffic Signals	Single Bushes
Traffic Signal Poles	Brush Outline
Light Poles	Orchards/Nurseries

Utility Poles	Crops
<b>Disturbed Areas</b>	<b>Airport</b>
Pile	Runway
Construction Site	Taxiway
Quarries	Apron
Open Mine	Helipad
Rock Outcrop	<b>Railroads</b>
Boulders	Railroad
Disturbed Areas	Abandoned Railroad
<i>(P) stands for painted feature</i>	Crossing
<b>Utilities</b>	Roundhouse
Manholes	
(P) Catch Basins	
(P) Fire Hydrants	
(P) Water Valves	
(P) Traffic Signals	
Traffic Signal Poles	
Light Poles	
Utility Poles	

***Vector Feature Dataset for Update – Maricopa, AZ***

ISC’s costing approach involves assignment of the County’s land area into three classes based on an assessment of development density: urban, semi-urban and rural. These classes are associated with an appropriate degree of effort for the resulting planimetric extraction. Feature extraction (compilation) shall be performed in a stereo 3D environment (working from stereo models) yielding a 3D final product. In summary, stereo imagery covering the entire project area shall be thoroughly examined by a production analyst. Utilizing the (RFP 2.15.1) Maricopa County feature schema and photo interpretation skills, the production analyst shall update existing map features and, in addition, shall extract new features as required according to the mapping specifications for the project area. All new/updated features shall be developed on softcopy photogrammetry workstations that achieve first-order results.

All planimetric features listed in the Maricopa County schema which are identifiable on, or interpretable from the aerial photographs, shall be captured, as necessary. ISC shall collect vector data that conforms to standard GIS topology “rules,” such as:

- **Edge Matching** - All digitized features shall be both visual and coordinate edge-matched with features from existing data, in adjacent tiles, sheet edges, and at model breaks or other artificial boundaries within a tile. No edge match tolerance shall be allowed. Attributes for adjoining features shall also be identical.
- **Common Boundaries** - All vector features that share a common boundary, regardless of digital map layer, shall have the exact same digital representation of that feature in all common layers
- **Point Duplication** - No duplication of points shall occur within a data string
- **Connectivity** - Where vector elements visually meet, they shall also digitally meet. All confluences of line, area and polygon data shall be exact mathematically; that is, no “overshoots,” “undershoots,” or “offsets” or “pseudo nodes” shall exist. Lines that connect polygons shall intersect those polygons precisely; that is, every end point shall be an intersection point of the respective polygon.
- **Line Quality** - A high quality cartographic appearance shall be achieved. Transitions from straight line to curvilinear line segments shall be smooth, and without angular inflections at the point of intersection. The digital representation shall not contain extraneous data at a non-visible level. There shall be no jags or hooks or zero length segments. Curvilinear graphic features shall be smooth with a minimum number of points. When appropriate, line smoothing programs shall be used to minimize the angular inflection in curvilinear lines. Any lines that are straight, or should be straight, shall be digitized using only two points that represent the beginning and ending points of the line.
- **Segmentation** - The digital representation of linear elements shall reflect the visual network structure of the data type. An element shall not be broken or segmented unless that segmentation reflects a visual or attribute code characteristic, or unless the break is forced by database limitations.
- **Area and Polygon Closure** - For area features being digitized, the last coordinate pair shall be exactly (mathematically) equal to the first coordinate pair
- **Point Criteria** - All point features shall be digitized as a single x, y, z coordinate at the visual center of that feature

### *Software to be Used*

From a technology perspective, ISC has and shall continue to select the best available software for the accomplishment of Geospatial data production. The company is not bound to any particular line of tools. The table below presents the principle software packages/toolsets employed in a general ISC production:

Software Line	Vendor	Function for Geospatial Production
GeoMedia™ Suite	Intergraph Corp.	Comprehensive geographic information system (GIS)-based editing and display environment used across all aspects of content management. Principle tools include GeoMedia Professional and GeoMedia Fusion. ISC's primary platform for GIS processing.
ImageStation Stereo for GeoMedia™	Intergraph Corp.	Tools for interactively collecting and updating map feature geometry (2D and 3D) and attributes from aerial or satellite stereo models. GeoMedia environment.
ERDAS APOLLO™	Intergraph Corp.	Solution for cataloging large volumes of geospatial data; web-based portal for quick retrieval over target area. Appropriate for very large-scale projects.
ERDAS Imagine™	Intergraph Corp.	Industry-standard image processing and raster exploitation suite.
Feature Manipulation Engine (FME)™	Safe Software, Inc.	Extract, Translate, Load (ETL) workbench for flexible data import, export, and transformation/manipulation (including fusion). ISC has extremely advanced expertise with this powerful toolset.
MRF Cleaner	MRF Geosystems Corp., licensed to Safe Software, Inc.	Module that integrates with FME to dynamically repair geometric problems in input data such as overshoots and undershoots within a specified tolerance. Used for multi-layer, multi-tolerance two- and three-dimensional data repair within the ETL process.
ArcGIS®™	Esri, Inc.	Platform for geospatial data editing, review, and QC in what is for many a "native" format.
SQL Enterprise	Microsoft, Inc.	Robust database enables efficient processing of large volumes of data in an enterprise setting (SQL). Facilitates simultaneous review by multiple analysts, production control, insight into metrics, and flexibility to quickly enact changes.

***ISC Typical Software Environments - Tools for Geospatial Production***

Though ISC is software solution-independent, it should be noted that the company is a subsidiary of Intergraph Government Solutions, Intergraph Corporation, and Hexagon AB (ISC's parent companies). The ready availability of a broad range of technical software and domain expertise brings opportunities for collaboration, feedback, support, and tailored software enhancements that set ISC apart from other geospatial production contractors



*ISC Corporate Reach Back for Mapping Technology Support*

*Quality Control*

ISC shall perform appropriate Quality Control (QC) reviews at planned intervals during the initial production process.

An independent, 100% QC check over imagery shall be performed on each task assignment area when the planimetric updates have been completed. This is in addition to the quality control steps mentioned above that take place during the production (extraction) phase of the effort. The QC review is accomplished in the same software environment that was used for extraction, and in many ways re-creates the extraction process. Working with specialty toolsets, queries, and methods, QC Analysts shall systematically evaluate the captured data against the stereo imagery backdrop in a photo-interpretation review, and with attention paid to the Maricopa extraction specifications. An extra focus shall be applied in areas which merit new or revised extraction, based on review of the imagery. QC Analysts shall also use a variety of symbolization and database query tools to identify any data discrepancies. For the datasets, they shall perform quality control procedures to ensure that the following items are in compliance with Maricopa specifications:

- Feature Completeness
- Attribute Completeness
- Relative Positional Accuracy in X,Y and Z
- Capture Density
- Thematic Accuracy and Consistency
- Topological Consistency
- Topographic Consistency and completeness (including placement of spot heights)
- Edge Matching

No dataset shall be released with any known defects remaining (“zero defects”). Planimetric vector deliverables shall be in Esri ArcGIS GeoDatabase format, and in a version compatible with the County’s requirements.

*Quality Control - ISO 9001:2008-Certified Quality Management System*

When it comes to product quality, ISC constantly strives to improve its processes, products and services. ISC seeks to ensure Maricopa County’s total satisfaction by meeting or exceeding requirements in all mapping services. ISC’s Quality Management System (QMS) was first awarded

certification to the International Organization for Standardization (ISO) 9001:2000 Standard in April 2004. ISC’s QMS was recently awarded certification to the new (revised) ISO 9001:2008 Standard. ISC’s ISO certification signifies that its QMS has been thoroughly assessed and approved against the internationally recognized standard for quality in management and processes. It provides clear evidence of ISC’s total commitment to recognized quality standards; it assures Maricopa County of repeatable processes that result in geospatial data and services of the highest caliber. ISC’s dedication to quality management systems is ongoing, with particular emphasis on continual process improvement, communication, and maintaining a customer focus through the company.

*Street Level LiDAR*

The following table below provides a “rough order of magnitude” basis for estimating the cost collecting Street Level LiDAR/Imagery using the Optech Lynx M1, calibration and processing of the data. Price also includes 360-video and stills delivered with SAM-PRO™.

- The Road Centerline Mileage is for contiguous roadway drives
- Project is collected on a single mobilization
- Data collection is based on two passes for each Road Centerline Mile
- LiDAR data is processed to GIS Mapping accuracy
- Pricing includes processed LiDAR data, stitched 360-video imagery and stills

<b>Street Level LiDAR</b>	
<b>Road Centerline Mileage</b>	<b>Price/Mile*</b>
<100	Project-by-project
100-200	\$259
200-500	\$230
500-1000	\$201
1000+	\$184

***\* Plus mobilization fee not to exceed \$10,000***

Operational costs are driven by daily costs associated with the crews and systems as well as project driving mileage. Since pricing of projects involving less than 100 miles can vary widely depending on locations and project specifics they must be negotiated on a project by project basis.

Pricing noted above includes full ownership of the Street Level LiDAR deliverables to Maricopa County.

SAM was an early adopter of vehicle based LiDAR street level imagery collection technology and purchased its first system in 2009 to provide its clients safe, efficient solutions in data collection. SAM's award winning Mobile LiDAR mapping division compliments other internal geospatial disciplines including traditional surveying, sub-surface utility location, GIS, and hydrographic surveying, providing a depth of technical knowledge unmatched by most traditional survey firms.

**Resources:** SAM owns two Optech Lynx Mobile LiDAR Mapping systems that are enhanced with its custom designed SAMCAM, a high definition camera sensor array, capturing 360-degree high resolution imagery that can be fused with the LiDAR data to provide the ultimate 3D visual experience.



SAM Mobile LiDAR Mapping System Components:

1. Optech Lynx M1

- Two LiDAR Sensors capable of a max collection rate of 500,000 pts/second/- sensor.
- Positioning and Orientation System (POS) consisting of an Applanix Inertial Measurement Unit (IMU), Two GPS (Global Positioning Systems) antennas, and a DMI
- Applanix and Optech collection software which features real time, in vehicle monitoring of the POS data quality, current satellite configuration, LiDAR sensor conditions, and the LiDAR data quality with the production and display of a Real Time Point Cloud

2. SAM-CAM, seven Camera Array allowing for 360-degree video/imagery capture integrated with the Lynx POS System

- Capable of simultaneous collection of 4K video and 8 MP still imagery at a frame rate of up to 15 frames per second
- Deliverables include georeferenced 360-degree stitched video and frame imagery to assist with asset extraction/identification and point cloud colorization

3. Chevy SUV, equipped with hi-rail system for rail applications and latest technology for optimal results and safety.

- Real Time vehicle tracking and Drive Plan display gives the Acquisition Crew the ability to monitor progress and minimizes the opportunity for incomplete collection during the execution of complicated drive plans
- Vehicle GPS tracking system monitored from office, depicts real time vehicle location and status for safety and operations



Tight Integration of LiDAR and Imagery Gray Scale Points are LiDAR Points Projected in Imagery

Each of the SAM Mobile Mappers consist of two LiDAR units and an oblique 360° digital RGB geo-referenced camera system. Both the LiDAR data as well as the imagery/video are tied to the onboard telemetry system. The telemetry system consists of an Inertial Measurement Unit and two GPS receivers. The telemetry components are post processed together to obtain a system trajectory. This LiDAR system produces point density spacing from 0.01 foot with efficient acquisition of millions of 3D design points per minute, far exceeding the efficiency of traditional survey methods.

On the LiDAR side, this trajectory, coupled with the raw LiDAR range (distance) data is used to generate a point cloud, which provides a full 3D picture of the project roadway and assets. After generating the raw point clouds, SAM selects the point clouds with the best resolution and post-processing accuracies. These shall be used during the data extraction and attribution phase.

On the video/imagery side (SAMPro™), SAM couples the system trajectory with the 360° imagery to accurately reference the imaging system horizontally and vertically to the telemetry. This geo-referenced 360° video shall be imported into the SAM Portable Data Index (PDI) which shall map the location of the camera on a 2D map overlaid on existing satellite imagery. On this map, the user can select any location along the system tracks. From each location, the user shall get a set of metadata for that location and can launch the video and any existing oblique still imagery from the selected point forward. Both of these resulting data sets shall be utilized during the asset extraction and attribution phase.

By acquiring and post processing the LiDAR and video/imagery data, SAM is effectively bringing the field into the office. All asset acquisition, which shall normally be performed on the ground by a person manually, can instead be extracted from a computer in the office. The office setting negates disrupting traffic and is much safer.

This combination of data provides wider application possibilities including extraction of geospatial data at GIS mapping accuracy. Since the Lynx M1 collects LiDAR at engineering grade relative accuracy, the data owner has the option of upgrading absolute accuracy of the data set or any part of the data should it be required for engineering design purposes. This is accomplished with the collection of additional ground control and additional calibration of the LiDAR data to achieve the desired absolute accuracy.

### *Street Level Imagery*

**Street Level Imagery** shall be collected and provided in the SAM-PRO™ display system to build and support an asset management database that provides easy access to data and is simple to manage. The table below provides a “rough order of magnitude” basis for estimating the cost of Street Level Imagery collection and processing for delivery in SAM-PRO™.

Assumptions for the following pricing table include:

- The Road Centerline Mileage is for contiguous roadway drives
- Project is collected on a single mobilization
- Street Level Imagery is accomplished with a single pass for each Road Centerline Mile
- Pricing includes stitched 360-video imagery and stills

Street Level Imagery	
Road Centerline Mileage	Price/Mile*
<100	Project-by-Project
100-200	\$109
200-500	\$92
500-1000	\$81
1000+	\$75

**\* Plus mobilization fee not to exceed \$10,000**

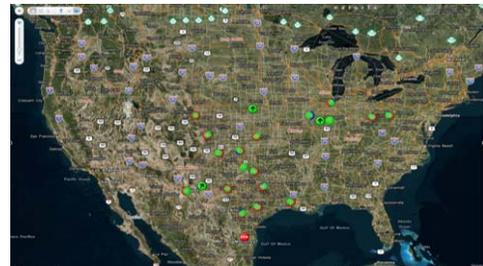
Operational costs are driven by daily costs associated with the crews and systems as well as project driving mileage. Since pricing of projects involving less than 100 miles can vary widely depending on locations and project specifics, they must be negotiated on a project-by-project basis.

Operational costs are driven by daily costs associated with the crews and systems as well as project driving mileage. Since pricing of projects involving less than 100 miles can vary widely depending on locations and project specifics they must be negotiated on a project by project basis.

Pricing noted above includes full ownership of the Street Level imagery deliverables to Maricopa County.



Surveying And Mapping, LLC (SAM) shall support Maricopa County with Street Level Imagery. SAM is one of the largest geospatial firms in the United States, with more than 650 employees located in 10 offices around the country. Its professional staff consists of 95 Professional Land Surveyors, including 4 licensees in Arizona; 17 professional engineers; more than 300 technicians; 150 fully-equipped field crews; and millions of dollars of equipment, computer hardware and software. SAM has provided control point support for six recent Pictometry aerial projects and looks forward to the opportunity to



*Green and red dots denote the activity of multiple SAM crews*

participate in this project for survey support along with Optional Street Level Imagery and/or LiDAR needs

**SAM-PRO™ Imagery Viewing Tools**

SAM-PRO™ is software developed by SAM to provide access to spatially referenced image data through a user-friendly interactive interface. The GIS-based system delivers photos, video, and LiDAR images through a stand-alone application that operates in an Esri® software environment. The system can also utilize video from SAM’s proprietary camera array to deliver full 360-degree panoramic video in HD quality. The camera system can be used with different types of collection vehicles, depending on project objectives and location. With 360-video, users having the ability to pan, zoom, tilt, or view in any direction as the video runs, allowing the user to change views in real time while browsing a video sequence.

**Street Level Imagery**

The SAM-PRO™ system displays Esri® base maps including orthophotography, mapped infrastructure networks, the route of the acquisition vehicle, and interactive geo-referenced designations that allow users to load images or video from any location within the project site. Users can browse, select, and view anywhere along a defined route, and interactive linking eliminates the need to make multiple passes over project areas or sort through large numbers of images or visual data to analyze a specific location. A comprehensive data set that is immediately accessible provides managers with the tools necessary to make quicker and more thorough analytical decisions.



For clients across several market sectors and project types, SAM-Pro™ has proven to be a very effective tool for navigating through large amounts of imagery and video data. Combined with SAM’s 360-video acquisition capabilities, SAM offers this exceptional new option to help manage each user’s project assets.

The screenshot displays the SAM CAM Pro interface. It features a central map with a green route line and several camera view windows. A legend on the left lists various data layers such as 'USA Top Maps', 'ESRI Imagery', 'World Imagery', 'Low Resolution 15m Imagery', 'High Resolution 30m Imagery', 'Chattahoochee', 'Transportation', 'World Transportation', 'Tracks', 'Points', 'Routes', and 'GPS Points'. On the right, a 'Video/Camera Placement' window shows a top-down view of a vehicle with camera locations and a table with the following data:

Media Point - 9	
NAME	15056-014-14-0000-000
DESCRIPTION	Charleston Blvd, Phoenix, AZ (15056-014-14-0000-000)
URL	http://samsam.com/15056-014-14-0000-000

At the bottom of the interface, a text box reads: "SAM CAM Pro™ Supports Display of 4 Camera Views and/or 360° Viewing of All Camera Views Seamlessly Stitched Together".

The functionality illustrated above shows a selected centerline. The user can select any starting point on the centerline and begin a 360-video drive along the route. At any point the drive can be paused to select high resolution stills in any direction for zooming in on specific areas of interest. The illustration below shows a typical user interface with an image selected at right.



### Sam Property Imagery

SAM CAM imagery and the SAM-PRO™ system is also very well suited for serving the Assessing Department need for high quality street level imagery. The spatial accuracy of the imagery provides for highly accurate tagging to parcel location data. Automated processes are available to extract property photos based on parcel width.





Street Level Imagery

<u>DESCRIPTION OF SERVICE</u>	<u>UNIT</u>	<u>EXTENDED PRICE*</u>
Street Level Imagery	\$2.58 per parcel collected	\$193,500

*\*Based on the collection of at least 75,000 parcels in a single collection session/project. Contractor and County may elect to negotiate for significant changes in unit volume requiring collection.*

Maricopa County shall receive full ownership of their Tyler Street Level imagery.

Street Level Imagery

**B. Street Level Imagery**



Tyler Technologies (NYSE: TYL) is a leading provider of end-to-end information management solutions and services for local governments. Tyler partners with clients to empower the public sector — cities, counties, schools and other government entities — to

become more efficient, more accessible and more responsive to the needs of citizens. Tyler’s client base includes more than 13,000 local government offices in all 50 states, Canada, the Caribbean, the United Kingdom and other international locations. Forbes has named Tyler one of “America’s Best Small Companies” eight times and the company has been included six times on the Barron’s 400 Index, a measure of the most promising companies in America. More information about Plano-based Tyler Technologies can be found at [www.tylertech.com](http://www.tylertech.com).



## *Proposed Methodology*

Tyler's deliverables shall be fully compliant with the specifications noted in the scope of work identified in Maricopa County. The following points have been considered in Tyler Technologies' proposed approach:

- i. The consistency of image quality and information available for mass appraisal, GIS, planning, public safety and Maricopa County's taxing unit practices
- ii. On-site address verification and creation of GIS point layer containing coordinates for each significant structure
- iii. The speed of acquisition, delivery, and opportunity for immediate use of information. The speed at which new discovery is made and reported to the County
- iv. Tyler Technologies' capabilities to provide a worry-free and fully functional integration of the newly collected data in the County's systems
- v. The verification of the County's GIS parcel layer and related information. Quality control and verification of vendor presence and progress
- vi. Cost of data acquisition and inherent value to the County. While the stop and compose method Tyler employs may at times be more costly than drive-by methodologies, the resulting accuracy and product ensures full compliance, confidence, and usability of the data, thereby reducing field visits, review time, and defense of value costs. The proposed cost of service for the Street Level Imagery is reflective of the scope contained here within. Additional configurations and methodology of approach are available and can be discussed at length with the County.





## *Project Approach*

### *Field Data Collection Services*

1. **Street-View Imaging** – For each **improved parcel** in the jurisdiction, **one or more** digital photographs of each primary significant structure taken from the closest public access point shall be recorded. Additional photographs shall be recorded as necessary to convey the value of the subject property and outbuildings.
2. The deliverable photos shall be in non-proprietary digital format for integration with the County's other Microsoft Windows compliant systems. The digital photos shall be compressed using industry standard JPEG (.jpg) compression and a photo resolution of (4272 horizontal pixels x 2848 vertical pixels), 12 megapixels (or less if the County requests) and occupy approximately 1.5-2.0 megabyte of server space. Each digital photo shall be labeled with the parcel identification number (sbl#) and/or assessed address, and the date the photograph was recorded. Multiple copies of images shall be provided at various resolutions for various deployments upon request.

**Image Criteria** – The following factors shall be used to determine the image criteria for each parcel's photography:

- An unobstructed curbside digital photograph captured without entering the private property. When possible, and without affecting the best view, the structure shall be imaged so that the front door/façade as well as one side of the building is visible, providing the depth of the building. Additional images shall be collected, as needed, to convey value, while a visibility code shall be added to the attribute table to flag obstructed structures/views.
- High resolution professional grade digital SLR cameras with multiple zoom lenses shall be employed for all image collection.
- Each structure shall compose a minimum of 75% of the image and shall be appropriately framed to demonstrate the structure's proportionate height, width, and exterior condition.

- No part of the structure shall be cropped, unless absolutely necessary due to the size or location of the building on the property.
- Each photograph shall be clearly focused with adequate tint, brightness, contrast and proper exposure.
- Each image shall be compliant with IAAO standards.
- Tyler Technologies warrants that each photograph shall meet the above-described quality criteria. At no additional expense to the County, unacceptable photographs shall be re-taken for one (1) year beyond the completion of this project.

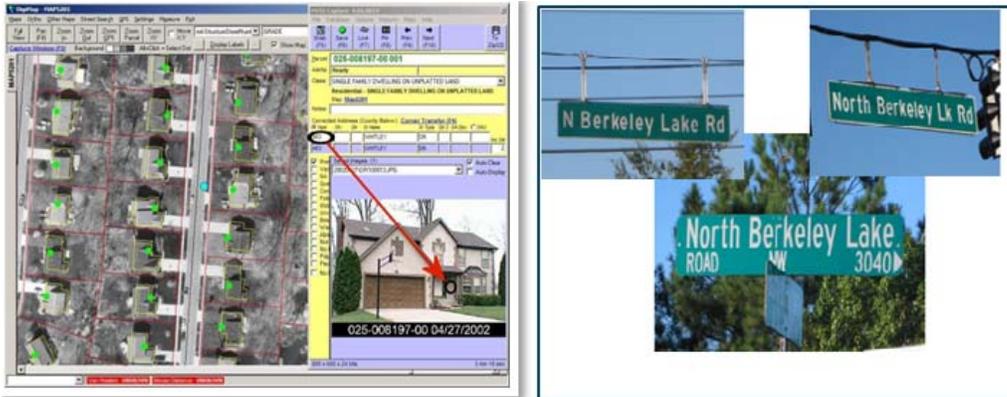
Additional information on technical collection methods and imaging standards specific to each property classification - exempt, residential, commercial, mobile home, industrial, vacant, agricultural, utility - shall be reviewed with the County and approved prior to project commencement or upon request by the County. Additional information on technical collection information of the systems employed is available upon request by the County.

**1. Geo-Referenced Structure Locations** – Vehicle-based field data collection shall be accomplished with a mobile data collection vehicle, equipped with a commercial studio grade quality camera with mutipple zoom lenses, a GPS receiver, and an on-board computer capable of recording a color digital photograph. A Geographic Information System (GIS) shall be used to obtain and assign x, y coordinates for all structural images and azimuth. For each of the structure and unit photographs, an x, y coordinate shall be stored in a point attribute table file. The point attribute table file shall contain two coordinates: one for the position of the mobile collection unit when the photograph is recorded, and one for the position of the structure’s primary entrance (recommended). The x, y coordinate for the primary entrance shall be determined from an “ortho accurate” process, where the coordinate is selected from an orthophotograph for the point over the primary entrance and within the exterior boundary (footprint) of the structure. The orthophoto graph and related information shall be provided by the County or via deliverable of the selected vendor team.



The deliverable point layer and attributes, when integrated with the County's GIS and remote sensed data (Aerial /Oblique photography), shall allow end users to select a particular property to view from the map and be centered directly over the building(s) of interest and related images.

- 2. Parcel Primary Address Verification** – This process shall verify and create a corrected site address and identify street sign anomalies for each parcel and the primary address that can be determined from public access. The Address database structure shall be consistent with the latest National Emergency Number Association (NENA) data exchange format, or as determined with Maricopa County's staff.



- 3. Mobile Collection - Data Collection and Verification** – Incorporated in the Vehicle Field Data Verification process using Tyler Technologies' property information collection system (PICS) is the verification and data collection of property-related characteristics/attributes, which provides a high quality and affordable method of verifying the accuracy of assessment data in the field. In addition, County-provided data and related GIS information concerning parcel boundary lines, street centerlines, improvements, waste, demolition, new construction and graffiti shall be reviewed and identified. Additional features are available upon discussion with Tyler prior to project commencement.
-



Street Level Imagery

0 – 2000 road miles		\$60.00 per mile
2001 – 12,000 road miles		\$50.00 per mile
➤ 12,000 road miles		\$45.00 per mile

- Street Level Imagery prices include cloud-based storage and access
- Prices include GlobeSpotter, GlobeSpotter ArcGIS for Desktop and Street Smart for ArcGIS Online
- All prices are per year with a two year committment
- Web-based training is included. On-site training can be offered at an additional cost of \$1,500.00 per day
- Privacy Filter Option - face and vehicle license plate blurring is an added cost and must be included for public websites

CycloMedia offers a complete end-to-end solution for imagery collecting, automated data processing and cloud-based hosting of geo-referenced imagery, as well as developer tools for creating and distributing applications that benefit from this data. CycloMedia has developed a system capable of capturing full 360 degree spherical panoramic images that are geometrically correct while in motion; up to 120 kms/h at a 5m image interval.

**Content Acquisition**

CycloMedia’s solution shall provide Maricopa County with high resolution, 100 megapixel street level images captured every 5 meters (16.4 ft.) ensuring consistent coverage. Because of CycloMedia’s collection methods, the company is in a unique position to provide multiple views of the environment.

CycloMedia uses Open Street Map datasets as a basis for which roads shall be driven and where imagery shall be collected. Its collection schedule is scalable; therefore, it shall accommodate the County’s timeline of collecting street level imagery in an August/September timeframe but finishing no later than November 30th. CycloMedia’s vehicles average 225 miles per car, per week. CycloMedia is prepared to work closely with the County to obtain permission from the community for entry into gated communities or other restricted areas.

With a worldwide-patented recording technology, every pixel in the HD GeoCyclorama is georeferenced and represents a spatial direction with a known orientation from a known recording position. The

accuracy emanates from the recording location where each HD GeoCyclorama provides metadata with information on the date/time, the accuracy of the recording point, the Spatial Reference System and Camera system information. The accuracy of each recording point is reported to the County geographically in a heat map as the example below demonstrates. Green shows high positional accuracy, and red is poor positional accuracy due to minimal GPS/IMU signal under urban canyons and dense vegetation.



As an in-vehicle quality check, a green marker (signaling good GPS/IMU receiving) is automatically placed at the recording location on the in-vehicle map display. If there are any errors with the camera, available light or GPS signal, a red marker shall signify to the driver that an image needs to be recaptured immediately. The driver is required to periodically preview the captured imagery to ensure that the cameras are functioning properly and the five camera lenses are free of dirt, pollen, insects etc. A periodic visual check and cleaning of the camera lenses is also performed. This user interface, although not an automated routing system, allows the driver a better overall picture of what has been and needs to be captured and immediate feedback regarding the quality of the imagery.

In order to determine the proper coverage of a road, CycloMedia uses a “by lane” approach. One or two lane residential roads shall be driven in one pass, closest to the center of the road as safely as possible. For wider roads, such as highways and major roads, if the road has a median, the road shall be driven in both directions for a total of two passes. When two lanes are on either side, the road shall be driven in both directions for a total of two passes. When four lanes are on either side, a total of four passes shall be driven - two passes in each direction with one pass being on the inner most lane and one on the outer most lane. Four lane, one-way roads shall be driven in two passes - once on far left and once on far right.

***Production***

Capturing the data for Maricopa County shall be done using CycloMedia’s patented recording technology. Assuming normal weather conditions, the company’s HD GeoCyclorama systems shall be able to capture the project area in the timeline requested, August through November 30th. After receiving the first data at CycloMedia’s office, several processes need to be done to get a good HD GeoCyclorama.

The raw position measurements from the GPS/IMU/DMI sensors in the car, plus the reference data from a network of permanent GNSS reference stations, are processed into an accurate position and orientation for each 360° image.

The five fisheye images are prepared for editing, including adjustment for white balance, chromatic aberration, de-mosaicking (color filter array interpolation), color artifacts reduction and tone mapping and then combined into a 360° view. Several different image operations are performed on the 360° image soon after, including local contrast enhancement, sharpening and adaptive histogram enhancements.

During the image production phase, CycloMedia shall ensure that every image is of high quality and meets the County's QA/QC standards for imagery, including at a minimum images free of: digital artifacts, excessive shadow, radiometric and tonal imbalance, glare, extreme contrast, smearing, warping or distortion of features, ghosting, voids and artificial colorations. Factors to be reviewed or incorporated are overall focus, tint, brightness and contrast of the image, proper framing of the structure, with appropriate horizontal and vertical levelness, and adequate zoom level.

#### *Imagery Delivery*

As soon as the production steps are done, quality reports are automatically generated. These reports are used in the manual controls to approve a series of images. Images may be rejected after verification or possibly after visual inspection. Examples of these error messages are the degree of over or underexposure, wide class differences between the front and rear camera, or high inaccuracy in the position. In addition, systematic series of images are being randomly checked for visible defects, such as dirt or water on the lenses or low sun angle glare. The quality control requires that the urban area is visually inspected every third image and outlying areas are inspected every tenth image. In addition, the team shall also check whether the recordings completely cover the project area.

This completeness check is done based on the recording locations with the County's road map or Open Street Map data stored by default in GlobeSpotter. Images that have been rejected or areas that are missing shall be redone in the rework process.

CycloMedia recommends delivery of the images via a SaaS service into GlobeSpotter. Using the GlobeSpotter API with Esri integration via an Add-in proves to be the most efficient way to deliver the images.



### Street Level Imagery

In order to provide final confirmed pricing, the street level imagery project would need to be fully scoped (i.e. Preferred Property Image to be delivered or not, number of centerline road miles to be captured, number of improved parcels, etc.) with Maricopa County. *The price quoted below is for general estimation purposes only.* This estimate below was obtained assuming 1,240 centerline road miles, 100,000 improved parcels, and the assumption that a Preferred Property Image is to be delivered for each improved parcel.

Pricing: \$2.00 per parcel x 100,000 parcels.....\$200,000 U.S.D.  
excluding taxes

iLOOKABOUT, Inc. is a visual and data intelligence company serving commercial enterprises in the real estate, insurance, municipal, utility, assessment and appraisal sectors in North America. iLOOKABOUT is a pioneer in visual and data intelligence with its StreetScape product. The StreetScape technology and imagery is in use as an adjunct to GIS systems by a number of property assessment authorities in Canada and the United States, and is increasingly being adopted as a tool supporting Desktop Review. Rapid and scalable collection of images for rapid access to data and compatibility with industry standards for desktop review allows for cost savings and operational benefits.

#### Proposed Solution

The iLOOKABOUT StreetScape system is a hybrid of automated systems and manual intervention that are compliant with the International Association of Assessing Officers’ (IAAO) standards. The images are first created using a mobile system that follows the road network and parcel fabric of the target area. As

the Maricopa County-provided GIS data is used to match the imagery to the property for this project, the amount and quality of the GIS data shall determine the level of fit and accuracy of the imagery to the subject matter. Post-processing of the imagery shall begin immediately. Manual intervention by iLOOKABOUT's staff frames and tests the imagery's fit to the target parcels.

***StreetScape Image Creation Process***

iLOOKABOUT's mobile camera system automatically captures images every fifteen feet in order to thoroughly and completely capture from the public street visual coverage of the buildings and structures. The images are captured with two different lenses to help accommodate the varying distances of the subject matter from the camera, and provide the image detail required for tax assessment purposes. The street level imagery is measured in different quality tests and through multiple passes during the collection process to ensure the imagery collection targets are met and to avoid any delays in delivering the imagery.

***Preferred Property Image Selection & Delivery***

iLOOKABOUT shall select a Preferred Property Image (PPI) and additional multiple images for every parcel where required. The Preferred Property Images are selected using the County's GIS and CAMA data in both programmatic and manual processes.

The StreetScape image collection project shall be completed in six stages:

***1. Campaign Preparation***

All available GIS and address data shall be assembled, reviewed and discussed with the County prior to any field data collection. This shall ensure an efficient and timely collection schedule for the imagery collection. iLOOKABOUT's collection vehicles shall be identified and listed with approved signage mounted on the vehicles. iLOOKABOUT's staff shall be identified, background checks provided with approved badges, and introductions made to County authorities, if required. Schedules shall be sent to the County in advance should escorted entries be needed into any gated communities.

***2. Active Collection/Conversion***

Field work shall commence with iLOOKABOUT's vehicles collecting imagery based on maps that have been created using a combination of the GIS and address data provided by the County. The data shall be processed and delivered back to iLOOKABOUT for processing while the collection efforts continue to completion.



### *3. Post Collection Processing*

The collected imagery shall run through a series of processing and quality checks to validate that it meets iLOOKABOUT's high standards. Privacy blurring is initially completed in an automated solution, with the imagery then passing through a manual Quality Assurance process. This process is repeated for the entire parcel file provided by the County.

### *4. Delivery*

Images shall be delivered in any digital format requested - in batches, on discs, or through an .ftp site. Preliminary results shall be provided online and then delivered for testing and preliminary inspection by the County.

### *StreetScape Image Delivery System*

iLOOKABOUT's street level images shall be delivered via an external USB hard drive for upload into the County's CAMA system. Should the County wish to take advantage of the iLOOKABOUT/Pictometry image and software integration, it shall be able to access the data directly through its Pictometry Connect cloud-based portal licenses.

The StreetScape Image Delivery System is based on the dynamic generation of imagery through cloud-based web services. In addition to web services, iLOOKABOUT also shall provide GeoViewPort, a web application designed to facilitate the use of imagery and CAMA data to simplify the County's desktop review of properties. iLOOKABOUT offers several integrations to access the County's imagery with its existing workflows which is further described in the Additional Information section of this response.

The multiple image methodology of iLOOKABOUT StreetScape supports alternatives for Maricopa County to consider in the implementation of a final solution. The multiple images and format of the imagery allows the images to be delivered through different mechanisms and integrated into different applications. Because of the various delivery mechanisms, the imagery shall easily fit the existing software and business processes of Maricopa County, allowing the visual data purchased to be used in different ways and for different steps in the tax assessment business process.

In addition to the single image of each parcel delivered on a hard drive for the CAMA system, iLOOKABOUT street-level imagery shall be delivered in the following ways:

- A plug-in that delivers a web service for integrating into Pictometry Connect
- A plug-in that delivers a web service for integrating into Pictometry's Electronic Field Study (EFS) desktop software
- A plug-in that delivers the imagery and provides a panning viewer in Esri software products
- A web application, "iLOOKABOUT GeoViewPort," that is designed to efficiently review the visual property information of iLOOKABOUT StreetScape, Pictometry oblique or ortho imagery, and sketch images alongside a subset of select CAMA data for the Desktop Review process

### *1. Integration*

Web service delivery is available for the County's CAMA system and any other consumption applications, as needed. iLOOKABOUT has experience completing integrations into many software applications and major CAMA systems, including Pictometry Connect, Patriot

AssessPro and Tyler IAS World. The final delivery shall be tested and confirmed before production links are provided to the County. UAT links are also provided to ensure the application has functionality and all required data has been provided.

***2. Project Acceptance***

Project Acceptance software shall be provided to the County that matches images to their properties. The County can thus be satisfied that the image quality meets or exceeds its expectations. A minimum of 10% random historic images shall be tested against the new collection as a baseline test for accuracy. The typical project acceptance test shall require the County's staff to take part in this process to gain confidence in the match.

***Timing***

The timing of the commencement of a street level imagery project for Maricopa County would be mutually agreed with the County in advance of the project. Assuming a fleet size of three, iLOOKABOUT expects that the duration of imagery of collection shall be approximately three to four weeks, and that post collection processing and delivery shall be approximately three to four weeks.

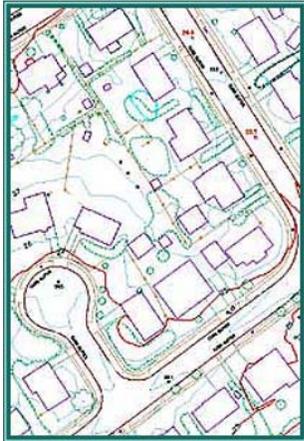
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## Planimetrics



AXIS GeoSpatial LLC is a Maryland registered Limited Liability Company head-quartered at 101 Bay Street in Easton, Maryland with additional locations in CO, DE & NJ. Formed in November 2001, AXIS is a leading provider of geospatial

data services for federal, state, local and private sector firms with 28 employees. As a **Small Business**, AXIS provides LiDAR, GIS and photogrammetric mapping firm specializing in collecting, processing, updating and providing the core information required in GIS, engineering and surveying applications.



As outlined in County's RFP, the planimetric features shall be compiled on Axis' Softcopy Stereo Workstations. Features shall be collected by trained and experienced Photogrammetrists under the direct supervision of an ASPRS Certified Photogrammetrist. AXIS shall not be responsible for missing or inaccurate features obscured by foliage and shadows. Areas of approximation and/or obscurity shall be delineated with a polygon.

All planimetric features compiled shall be acquired by photogrammetric mapping techniques using industry standard equipment and procedures. All features shall be captured and delivered in the County's approved Geodatabase format with the proper feature geometry and attribution.

BAE systems Socet Set, Cardinal Systems Vrone, and Esri ArcInfo software's shall be used to compile the planimetrics on a per tile basis.

## *GIS Editing and Finishing*

The AXIS GIS team supports its Photogrammetry Department by converting all CADD files from the Softcopy Stereo Workstations into Esri Geodatabase and/or shapefiles. Using ArcGIS, all points and polylines are placed into appropriate feature classes and spatial queries are run to ensure all features are captured during the conversion process. Polygon feature classes are created from polylines for elements such as lakes and ponds, marshes, open bodies of water, vegetation, woodlands, etc.

Polygon and line features that are updated are again checked by spatial location to verify that all were created from the polyline source. Polyline features are tested to avoid overshoots and undershoot, as well as ensuring against intersection or overlap where appropriate. Several of these checks are redundant as the nature of GIS software can cause slight shifts in the CADD to GIS conversion.

All features collected on Softcopy Workstations are also labeled with centroids allowing for quick and accurate feature characterization for polygon development. Woodlands are distinguished by both wooded areas and clearings. Water is classified by type such as marshes, lakes, open water bodies, etc. Once the polygon feature class is fully developed, additional queries are run against the centroids to verify the correct classification of each feature.

Once all features have been reviewed, the data is prepared for final delivery by exporting data into the appropriate Esri Geodatabase Format. Metadata is then developed for each feature class or existing

metadata is updated as necessary. The metadata is FDGC compliant and shall be delivered as part of the final data delivery.

In addition to industry standard map content requirements, the following criteria and specific map content requirements shall also be fulfilled:

**AXIS shall adhere to the following compilation requirements:**

- Edgematching: All digitized tiles must be both visual and coordinate-edgematched with adjacent sheets. No edgematch tolerance shall be allowed. The coordinate edgematch must be 100 percent precise at double precision values. Attributes for adjoining features must also be identical.
- Common Boundaries: All graphic features that share a common boundary must have the exact same digital representation of that boundary in all layers when required by the database design.
- Point Duplication: No duplication of points that occur within a data string is permitted.
- Connectivity: Where graphic elements visually meet, they must also digitally meet. All confluences of line, area and polygon data must be mathematically exact; that is, no “overshoots,” “undershoots,” or “offsets” are permitted. Lines that connect polygons must intersect those polygons precisely; that is, every end point must be an intersection point of the respective polygon.
- Line Quality: A high quality cartographic appearance shall be achieved. Transitions from straight line to curvilinear line segments shall be smooth and without angular inflections at the point of intersection. The digital representation must not contain extraneous data at a non-visible level. There should be no jags or hooks or zero length segments. Curvilinear graphic features should be smoothed with a minimum number of points. When appropriate, line-smoothing programs should be used to minimize the angular inflection in curvilinear lines. Any lines that are straight, or should be straight, should be digitized using only two points that represent the beginning and ending points of the line.
- Segmentation: The digital representation of linear elements must reflect the visual network structure of the data type. An element should not be broken or segmented unless that segmentation reflects a visual or attribute code characteristic, or unless the break is forced by database limitations.
- Area and Polygon Closure and Centroid: For area features being digitized, the last coordinate pair must be exactly (mathematically) equal to the first coordinate pair. No line or polygon shall cross itself, or any other digitized feature, except to join at an actual confluence. All digitized features that are continuous across map boundaries shall be edited to effect smooth, continuous lines.
- Point Criteria: All point features shall be digitized as a single x, y coordinate pair at the visual center of that graphic feature.
- Features that cross map sheet or model boundaries shall not have duplicate data points at those boundaries except where those boundaries coincide with delivery areas. Post-processing procedures shall be utilized as necessary to minimize data redundancies. No map sheet borders shall be provided as continuous polygons for deliveries of a single coverage. One master grid shall be created and all grid tics for all sheets shall match exactly. Each line or polygon feature class must be free of node and arc intersect errors. Each polygon feature class must have one unique label per polygon and be free of label errors.
- All data created in this conversion effort shall be spatially continuous. This requirement for spatial continuity implies that the structure of the database shall not inhibit the execution of GIS functions across boundaries or artificial discontinuities in the database (sheet edges, model edges or other delimitations).

The following is a list of key areas requiring review during the final QC process of the AXIS Internal Production Process:

- ✓ All Production QA/QC Forms Completed and Pass?
- ✓ All Features outlined in the Scope of Work correctly identified based on stereo imagery, digitized and coded correctly?
- ✓ Planimetric Features align with stereo imagery within acceptable tolerances?
- ✓ All annotations created and placed for relevant layers?
- ✓ Databases populated and linked appropriately?
- ✓ Geodatabase Files developed according to Scope of Work?

### *Ownership of Planimetric Data*

Maricopa County shall have ownership of all newly compiled Axis planimetric data from the aerial imagery.

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## *Exhibit B – Contractor License Agreements*

### LICENSE TERMS

#### PICTOMETRY DELIVERED CONTENT TERMS AND CONDITIONS OF USE

These Pictometry Delivered Content Terms and Conditions of Use (the “Delivered Content Terms and Conditions”), in combination with the corresponding Agreement into which these terms are incorporated, collectively set forth the terms and conditions that govern use of Delivered Content (as hereinafter defined) for use within computing environments operated by parties other than Pictometry. As used in the Delivered Content Terms and Conditions the terms “you” and “your” in uppercase or lowercase shall mean the Customer that entered into the Agreement into which the Delivered Content Terms and Conditions are incorporated.

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- 1.1 “Authorized Subdivision” means, if you are a county or a non-state consortium of counties, any political unit or subdivision located totally or substantially within your boundaries that you authorize to have access to Delivered Content pursuant to the Delivered Content Terms and Conditions.
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- 1.4 “Delivered Content” means the images, metadata, data layers, models, reports and other geographic or structural visualizations or embodiments included in, provided with, or derived from the information delivered to you by or on behalf of Pictometry pursuant to the Agreement.
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  - (b) permit access and use of the Delivered Content through Authorized Systems by:
    - (i) Authorized Users for performance of public responsibilities of you or Authorized Subdivisions that are to be performed entirely within facilities of you or Authorized Subdivisions;
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    - (iii) individual members of the public, but only through Authorized Users and solely for the purpose of making hard copies or jpg copies of images of individual properties or structures (but not bulk orders of multiple properties or structures) to the individual members of the public requesting them; provided, however, that Contractor understands that the Customer may be required to provide responsive records in response to a public records request under Arizona law. In this instance, Customer shall give Pictometry prompt notice of said public records request in order for Pictometry to take legal action if so desired.
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- 3.1 **Geographic Data.** If available, you agree to provide to Pictometry geographic data in industry standard format (e.g., shape, DBF) including, but not limited to, digital elevation models, street centerline maps, tax parcel maps and centroids, which data, to the extent practicable, shall be incorporated into the Delivered Content. You agree that any of this data that is owned by you may be distributed and modified by Pictometry as part of its products and services, provided that at no time shall Pictometry claim ownership of that data.
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- 3.5 Project Participants.** Each notice to Pictometry identifying a potential Project Participant shall include a detailed description of the scope and nature of the Project Participants' planned work and the intended use of the Delivered Content in such work. Pictometry retains the right to restrict or revoke access to Delivered Content by any Project Participant who does not comply with the terms of the Delivered Content Terms and Conditions; provided, however Pictometry has sent prior written notice to the Customer no later than ten (10) business days prior to its intended date of restriction or revocation, and that such written notice contains sufficient factual information to establish Pictometry's good faith basis for its conclusion that a Project Participant is not in compliance with the terms of the Delivered Content Terms and Conditions.

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- 4.2 Effect of Termination.** Upon termination of the license granted to you in the Delivered Content Terms and Conditions, you shall immediately cease all use of the Delivered Content, promptly purge all copies of the Delivered Content from all workstations and servers on which any of it may be stored or available at the time, and return hard drive/media containing Delivered Content to Pictometry.

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[END OF DELIVERED CONTENT TERMS AND CONDITIONS]

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#### 3. DISCLAIMERS

- 3.1 The Online Services and the Licensed Content are provided for visualization purposes only, are not authoritative or definitive, and do not constitute professional engineering or surveying services.

- 3.2 The Online Services and the Licensed Content are not to be relied upon to precisely locate or determine property boundaries and should not be used in lieu of a professional survey where the accuracy of measurements, distance, height, angle, area and volume, may have significant consequences.
- 3.3 All measurements and reports generated by the Online Services or from the Licensed Content are based upon second order visualization and measurement data that do not provide authoritative or definitive measurement results suitable for professional engineering or surveying purposes.
- 3.4 Contour information obtained from the Online Services or contained in the Licensed Content is generated from undersampled elevation data, is provided for informational purposes only, and is not suitable for use as the basis for hydrographic computations, estimations or analyses.
- 3.5 While the Online Services and the Licensed Content may be considered useful supplements for life critical applications, they are not designed or maintained to support such applications and Pictometry and its third party suppliers of the Online Services and the Licensed Content hereby disclaim all liability for damages claims and expenses arising from such use.
- 3.6 Your reliance on the Online Services and the Licensed Content should only be undertaken after an independent review of their accuracy, completeness, efficacy, timeliness and adequacy for your intended purpose.
- 3.7 Pictometry and each third party supplier of any portion of the Online Services or the Licensed Content assume no responsibility for any consequences resulting from the use of the Online Services or the Licensed Content.
- 3.8 Pictometry and each third party supplier of any portion of the Online Services or the Licensed Content hereby disclaim all liability for damages, claims and expenses arising from or in any way related to the accuracy or availability of the Online Services and the Licensed Content.
- 3.9 By accepting these General Terms and Conditions or by using the Online Services or the Licensed Content, you waive any and all rights you may have against Pictometry, each third party supplier of any portion of the Online Services or the Licensed Content, and each of their directors, officers, members and employees, arising out of use of or reliance upon the Online Services or the Licensed Content.

#### **4. LIMITED WARRANTY**

- 4.1 Pictometry represents and warrants that it has the right and authority to make the Online Services and the Licensed Content available to you and your Eligible Users as authorized expressly by this License Agreement.
- 4.2 EXCEPT AS OTHERWISE PROVIDED IN SECTION 4.1, THE ONLINE SERVICES AND LICENSED CONTENT ARE PROVIDED ON AN "AS IS", "AS AVAILABLE" BASIS AND PICTOMETRY AND EACH THIRD PARTY SUPPLIER OF LICENSED CONTENT EXPRESSLY DISCLAIM ALL OTHER WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

#### **5. LIMITATION OF LIABILITY**

- 5.1 No Covered Party (as defined below) shall be liable for any loss, injury, claim, liability, or damage of any kind resulting in any way from (a) any errors in or omissions from the Online Services or the Licensed Content, (b) the unavailability or interruption of the Online Services or any features thereof or the Licensed Content, (c) your or an Eligible User's use of the Online Services or the Licensed Content, (d) the loss or corruption of any data or equipment in connection with the Online Services or the Licensed Content, (e) the content, accuracy, or completeness of the Licensed Content, all regardless of whether you received assistance in the use of the Online Service from a Covered Party, (f) any delay or failure in performance beyond the reasonable control of a Covered Party, or (g) any content retrieved from the Internet even if retrieved or linked to from within the Online Services.
- 5.2 "Covered Party" means (a) Pictometry and any officer, director, employee, subcontractor, agent, successor, or assign of Pictometry; and (b) each third party supplier of any Licensed Content, third party alliance entity, their affiliates, and any officer, director, employee, subcontractor, agent, successor, or assign of any third party supplier of any Licensed Content or third party alliance entity and their affiliates.
- 5.3 TO THE FULLEST EXTENT PERMISSIBLE BY APPLICABLE LAW, UNDER NO CIRCUMSTANCES WILL THE AGGREGATE LIABILITY OF THE COVERED PARTIES IN CONNECTION WITH ANY CLAIM ARISING OUT OF OR RELATING TO THE ONLINE SERVICES OR THE LICENSED CONTENT OR THIS LICENSE AGREEMENT EXCEED THE LESSER OF YOUR ACTUAL DIRECT DAMAGES OR THE AMOUNT YOU PAID FOR THE ONLINE SERVICES IN THE TWELVE MONTH PERIOD IMMEDIATELY PRECEDING THE DATE THE CLAIM AROSE. YOUR RIGHT TO MONETARY DAMAGES IN THAT AMOUNT SHALL BE IN LIEU OF ALL OTHER REMEDIES WHICH YOU MAY HAVE AGAINST ANY COVERED PARTY.
- 5.4 TO THE FULLEST EXTENT PERMISSIBLE BY APPLICABLE LAW, NEITHER YOU NOR THE COVERED PARTIES WILL BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ATTORNEYS' FEES) IN ANY WAY DUE TO, RESULTING FROM, OR ARISING IN CONNECTION WITH THE ONLINE SERVICES, THE LICENSED CONTENT, OR THE FAILURE OF ANY COVERED PARTY TO PERFORM ITS OBLIGATIONS. THE FOREGOING LIMITATION OF LIABILITY SHALL NOT APPLY TO A PARTY'S INDEMNITY OBLIGATIONS OR YOUR (AND YOUR ELIGIBLE USERS') INFRINGEMENT OF INTELLECTUAL PROPERTY OR MISAPPROPRIATION OF PROPRIETARY DATA BELONGING TO PICTOMETRY OR ITS THIRD PARTY SUPPLIERS.
- 5.5 Notwithstanding anything to the contrary in this Section 5:
  - (a) If there is a breach of the warranty in Section 4.1 above, then Pictometry, at its option and expense, shall either defend or settle any action and hold you harmless against proceedings or damages of any kind or description based on a third party's claim of patent, trademark, service mark, copyright or trade secret infringement related to use of the Online Services or the Licensed Content, asserted against you by such third party provided: (i) all use of the Online Services and the Licensed Content was in accordance with this License Agreement; (ii) the claim, cause of action or infringement was not caused by you modifying or combining the Online Services or the Licensed Content with or into other products, applications, images or data not approved by Pictometry; (iii) you give Pictometry prompt notice of such claim; and (iv) you give Pictometry the right to control and direct the investigation, defense and settlement of such claim. You, at Pictometry's expense, shall reasonably cooperate with Pictometry in connection with the foregoing.
  - (b) In addition to Section 5.4(a), if the Online Services, the operation thereof or the Licensed Content become, or in the opinion of Pictometry are likely to become, the subject of a claim of infringement, Pictometry may, at its option and expense, either: (i) procure for you the right to continue using the Online Services or the Licensed Content, (ii) replace or modify the Online

- Services or the Licensed Content so that they become non-infringing; or (iii) terminate the License Agreement on notice to you and grant you a pro-rata refund or credit (whichever is applicable) for any pre-paid fees or fixed charges.
- (c) The provisions of Sections 5.4(a) and (b) shall constitute your sole and exclusive remedy for the respective matters specified therein.

**6. MISCELLANEOUS**

- 6.1 The terms and conditions of this License Agreement may be changed from time to time with written consent of both parties. If any changes are made to this License Agreement, such changes will: (a) only be applied prospectively; and (b) not be specifically directed against you or your Eligible Users but will apply to all similarly situated Pictometry customers using the Online Services. You may terminate this License Agreement upon written notice to Pictometry if any change to the terms and conditions of this License Agreement is unacceptable to you. For termination to be effective under this Section 6.1, written notice of termination must be provided to Pictometry within 90 days of the effective date of the change. Continued use of the Online Services following the effective date of any change constitutes acceptance of the change, but does not affect the foregoing termination right. Except as provided above, this License Agreement may not be supplemented, modified or otherwise revised unless signed by duly authorized representatives of both parties. Furthermore, this License Agreement may not be supplemented, modified or otherwise revised by email exchange, even if the email contains a printed name or signature line bearing signature-like font. The foregoing does not prohibit the execution of electronic contracts bearing electronic signatures of authorized representatives of both parties, provided such signatures include digital certifications or are otherwise authenticated.
- 6.2 In the event of a breach of this License Agreement by you, any Eligible User or someone using the Pictometry Credential of an Eligible User, Pictometry may temporarily suspend or discontinue providing access to the Online Services to any or all Eligible Users and Pictometry may pursue any other legal remedies available to it. Although your access (and all Eligible Users access) to the Online Services may be automatically suspended, Pictometry shall give you immediate verbal notice and written notice of its intent to suspend and/or discontinue your (and all Eligible Users) access to the Online Services.
- 6.3 All notices and other communications hereunder shall be in writing or displayed electronically in the Online Services by Pictometry. Notices shall be deemed to have been properly given on the date deposited in the mail, if mailed; or on the date received, if delivered in any other manner. Legal notices to Pictometry should be sent to Pictometry, Attn: General Counsel, 25 Methodist Hill Drive, Rochester, New York 14623.
- 6.4 The failure of you, Pictometry, or any third party supplier of the Online Services or any Licensed Content to enforce any provision hereof shall not constitute or be construed as a waiver of such provision or of the right to enforce it at a later time.
- 6.5 Neither you nor any Eligible User may assign or otherwise transfer your rights or delegate your duties under this License Agreement without the prior written consent of Pictometry. Any attempt by you or any Eligible User to assign, transfer or delegate your rights or obligations under this License Agreement without Pictometry's consent shall be void, and shall also void the limited license granted to you by this License Agreement. This License Agreement and any amendment thereto shall be binding on, and will inure to the benefit of the parties and their respective successors and permitted assigns.
- 6.6 This License Agreement will be enforced to the fullest extent permitted by applicable law. If any provision of this License Agreement is held to be invalid or unenforceable to any extent, then (a) such provision will be interpreted, construed and reformed to the extent reasonably required to render it valid, enforceable and consistent with its original intent and (b) such invalidity or unenforceability will not affect any other provision of this License Agreement.

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**[END OF ONLINE SERVICES GENERAL TERMS AND CONDITIONS]**

## LICENSE TERMS

### PICTOMETRY WEB VISUALIZATION OFFERING

#### TERMS AND CONDITIONS

These Pictometry Web Visualization Offering Terms and Conditions (the "WVO Terms and Conditions"), in combination with the corresponding Pictometry order form, if any, collectively constitute the license agreement (the "WVO License Agreement") that governs your use of Pictometry web visualization offerings (the "WVO Services"), the images available in the WVO Services, and all associated metadata and data layers included in, provided with, or derived from those images (the "WVO Licensed Content") provided by Pictometry International Corp. and its affiliated companies (collectively, "Pictometry"). The terms "you" and "your" in uppercase or lowercase shall mean the individual, entity (e.g., corporation, limited liability company, partnership, sole proprietor, etc.) or government agency entering into the WVO License Agreement.

#### 1. GRANT OF RIGHTS; RESTRICTIONS ON USE; OWNERSHIP

- 1.1 You are granted a nonexclusive, nontransferable, limited right to use and to provide public access to, and use of, the WVO Services solely for purposes of providing access to WVO Licensed Content in response to human-initiated, discrete location-specific requests through a single web site operated exclusively by or for you to serve you and your public constituencies and not for resale or redistribution or commercial use of any nature, other than by the Consortium Partners, as that term is defined in the Contract and in accordance with the terms and conditions of the Contract.
- 1.2 You may not copy or retain copies of the WVO Licensed Content obtained through the WVO Services or portions thereof onto any computer or storage device or media for the purpose of creating or maintaining one or more databases of that content for use in substitution for subsequent access to the content through the WVO Services or any other Pictometry Services, nor will you authorize or permit any user of the WVO Services to do so.
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- 1.4 You may not remove, alter or obscure copyright notices or other notices contained in the WVO Licensed Content.
- 1.5 You may not offer any part of the WVO Services or the WVO Licensed Content for commercial resale or commercial redistribution in any medium, other than to the Consortium Partners, as that term is defined in the Contract and in accordance with the terms and conditions of the Contract.
- 1.6 All right, title, and interest (including all copyrights, trademarks and other intellectual property rights) in the WVO Services and the WVO Licensed Content in all media belong to Pictometry or its third party suppliers. Neither you nor any users of the WVO Services or the WVO Licensed Content acquire any proprietary interest in the WVO Services, the WVO Licensed Content, or any copies thereof, except the limited use rights granted herein.

#### 2. TERMS OF ACCESS TO WVO SERVICES

- 2.1 You shall provide to all end-users of the WVO Services on the page through which they access such services conspicuous notice of the following terms of access: (a) WVO Licensed Content available through the WVO is copyrighted material, (b) end-users of the WVO Services are granted the right to access and view the WVO Licensed Content through the WVO Services for personal use only and not for commercial purposes of any type, (c) end-users of the WVO Services are prohibited from reproducing, reselling, transferring, redistributing or creating derivative works from WVO Licensed Content, (d) all right, title, and interest (including all copyrights, trademarks and other intellectual property rights) in the WVO Services and the WVO Licensed Content in all media belong to Pictometry or its third party suppliers, and (e) THE WVO SERVICES AND WVO LICENSED CONTENT ARE PROVIDED ON AN "AS IS", "AS AVAILABLE" BASIS AND PICTOMETRY AND EACH THIRD PARTY SUPPLIER OF WVO LICENSED CONTENT EXPRESSLY DISCLAIM ALL OTHER WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- 2.2 The WVO Services, the WVO Licensed Content, and features and functionality within the WVO Services may be enhanced, added to, withdrawn, or otherwise changed by Pictometry without notice. Pictometry warrants that if a withdrawn or otherwise changed feature significantly reduces the value of the Online Services to Customer, Customer shall have the option to terminate the Online Services, without penalty, and shall receive a prorated refund for any amounts prepaid up until the time of termination. Customer shall notify Pictometry within thirty (30) days of the date upon which the feature or functionality is withdrawn or changed.
- 2.3 You are aware and understand that any user data collected or stored by the WVO Services may be accessed by US law enforcement agencies under the US PATRIOT Act. You hereby release, and agree to hold Pictometry harmless from, all claims against Pictometry with respect to such access.

#### 3. DISCLAIMERS

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- 3.4 Contour information obtained from the WVO Services or contained in the WVO Licensed Content is generated from undersampled elevation data, is provided for informational purposes only, and is not suitable for use as the basis for hydrographic computations, estimations or analyses.
- 3.5 While the WVO Services and the WVO Licensed Content may be considered useful supplements for life critical applications, they are not designed or maintained to support such applications and Pictometry and its third party suppliers of the WVO Services and the

WVO Licensed Content hereby disclaim all liability for damages, claims and expenses arising from such use.

- 3.6 Your reliance on the WVO Services and the WVO Licensed Content should only be undertaken after an independent review of their accuracy, completeness, efficacy, timeliness and adequacy for your intended purpose.
- 3.7 Pictometry and each third party supplier of any portion of the WVO Services or the WVO Licensed Content assume no responsibility for any consequences resulting from the use of the WVO Services or the WVO Licensed Content.
- 3.8 Pictometry and each third party supplier of any portion of the WVO Services or the WVO Licensed Content hereby disclaim all liability for damages, claims and expenses arising from or in any way related to the accuracy or availability of the WVO Services and the WVO Licensed Content.
- 3.9 By accepting these WVO Terms and Conditions or by using the WVO Services or the WVO Licensed Content, you waive any and all rights you may have against Pictometry, each third party supplier of any portion of the WVO Services or the WVO Licensed Content, and each of their directors, officers, members and employees, arising out of use of or reliance upon the WVO Services or the WVO Licensed Content.

**4. LIMITED WARRANTY**

- 4.1 Pictometry represents and warrants that it has the right and authority to make the WVO Services and the WVO Licensed Content available to you as authorized expressly by this WVO License Agreement.
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**5. LIMITATION OF LIABILITY**

- 5.1 No Covered Party (as defined below) shall be liable for any loss, injury, claim, liability, or damage of any kind resulting in any way from (a) any errors in or omissions from the WVO Services or the WVO Licensed Content, (b) the unavailability or interruption of the WVO Services or any features thereof or the WVO Licensed Content, (c) your or any other party's use of the WVO Services or the WVO Licensed Content, (d) the loss or corruption of any data or equipment in connection with the WVO Services or the WVO Licensed Content, (e) the content, accuracy, or completeness of the WVO Licensed Content, all regardless of any assistance received in the use of the WVO Service from a Covered Party, (f) any delay or failure in performance beyond the reasonable control of a Covered Party, or (g) any content retrieved from the Internet even if retrieved or linked to from within the WVO Services.
- 5.2 "Covered Party" means (a) Pictometry, its affiliates and any officer, director, employee, subcontractor, agent, successor, or assign of Pictometry or its affiliates; and (b) each third party supplier of any WVO Licensed Content, third party alliance entity, their affiliates, and any officer, director, employee, subcontractor, agent, successor, or assign of any third party supplier of any WVO Licensed Content or third party alliance entity and their affiliates.
- 5.3 TO THE FULLEST EXTENT PERMISSIBLE BY APPLICABLE LAW, UNDER NO CIRCUMSTANCES WILL THE AGGREGATE LIABILITY OF THE COVERED PARTIES IN CONNECTION WITH ANY CLAIM ARISING OUT OF OR RELATING TO THE WVO SERVICES OR THE WVO LICENSED CONTENT OR THIS WVO LICENSE AGREEMENT EXCEED THE LESSER OF YOUR ACTUAL DIRECT DAMAGES OR THE AMOUNT YOU PAID FOR THE WVO SERVICES IN THE TWENTY-FOUR MONTH PERIOD IMMEDIATELY PRECEDING THE DATE THE CLAIM AROSE. YOUR RIGHT TO MONETARY DAMAGES IN THAT AMOUNT SHALL BE IN LIEU OF ALL OTHER REMEDIES WHICH YOU MAY HAVE AGAINST ANY COVERED PARTY.
- 5.4 TO THE FULLEST EXTENT PERMISSIBLE BY APPLICABLE LAW, NEITHER YOU NOR THE COVERED PARTIES WILL BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ATTORNEYS' FEES) IN ANY WAY DUE TO, RESULTING FROM, OR ARISING IN CONNECTION WITH THE WVO SERVICES, THE WVO LICENSED CONTENT, OR THE FAILURE OF ANY COVERED PARTY TO PERFORM ITS OBLIGATIONS. THE FOREGOING LIMITATION OF LIABILITY SHALL NOT APPLY TO A PARTY'S INDEMNITY OBLIGATIONS OR YOUR (OR ANY OTHER WVO SERVICES USERS') INFRINGEMENT OF INTELLECTUAL PROPERTY OR MISAPPROPRIATION OF PROPRIETARY DATA BELONGING TO PICTOMETRY OR ITS THIRD PARTY SUPPLIERS.
- 5.5 Notwithstanding anything to the contrary in this Section 5:
  - (a) If there is a breach of the warranty in Section 4.1 above, then Pictometry, at its option and expense, shall either defend or settle any action and hold you harmless against proceedings or damages of any kind or description based on a third party's claim of patent, trademark, service mark, copyright or trade secret infringement related to use of the WVO Services or the WVO Licensed Content, asserted against you by such third party provided: (i) all use of the WVO Services and the WVO Licensed Content was in accordance with this WVO License Agreement; (ii) the claim, cause of action or infringement was not caused by you modifying or combining the WVO Services or the WVO Licensed Content with or into other products, applications, images or data not approved by Pictometry; (iii) you give Pictometry prompt notice of such claim; and (iv) you give Pictometry the right to control and direct the investigation, defense and settlement of such claim. You, at Pictometry's expense, shall reasonably cooperate with Pictometry in connection with the foregoing.
  - (b) In addition to Section 5.5(a), if the WVO Services, the operation thereof or the WVO Licensed Content become, or in the opinion of Pictometry are likely to become, the subject of a claim of infringement, Pictometry may, at its option and expense, either: (i) procure for you the right to continue using the WVO Services or the WVO Licensed Content, (ii) replace or modify the WVO Services or the WVO Licensed Content so that they become non-infringing; or (iii) terminate the WVO License Agreement on notice to you and grant you a pro-rata refund or credit (whichever is applicable) for any pre-paid fees or fixed charges.
  - (c) The provisions of Sections 5.5(a) and (b) shall constitute your sole and exclusive remedy for the respective matters specified therein.

**6. MISCELLANEOUS**

- 6.1 The terms and conditions of this WVO License Agreement may be changed from time to time with the written consent of both parties. If any changes are made to this WVO License Agreement, such changes will: (a) only be applied prospectively; and (b) not be specifically directed against you but will apply to all similarly situated Pictometry customers using the WVO Services. You may terminate this WVO License Agreement upon written notice to Pictometry if any change to the terms and conditions of this WVO License Agreement is unacceptable to you. For termination to be effective under this Section 6.1, written notice of termination must be provided to Pictometry within 90 days of the effective date of the change. Continued use of the WVO Services following the effective date of any change constitutes acceptance of the change, but does not affect the foregoing termination right. Except as provided above, this WVO License Agreement may not be supplemented, modified or otherwise revised unless signed by duly

authorized representatives of both parties. Furthermore, this WVO License Agreement may not be supplemented, modified or otherwise revised by email exchange, even if the email contains a printed name or signature line bearing signature-like font. The foregoing does not prohibit the execution of electronic contracts bearing electronic signatures of authorized representatives of both parties, provided such signatures include digital certifications or are otherwise authenticated.

- 6.2 In the event that you fail to comply with any term of this License, this License shall automatically be suspended. Pictometry shall promptly notify you of your non-compliance, outlining the factual basis for its good faith belief that there has been a failure to comply with its terms and shall work together with you in good faith attempt to resolve the situation that triggered such suspension and reinstate this License on mutually agreeable terms. Should this not be resolved within ten (10) calendar days, this License will be terminated. Upon the termination of this License, you will cease use of the Web Visualization Offering and destroy all copies, full or partial, of the Proprietary Materials.
- 6.3 All notices and other communications hereunder shall be in writing. Notices shall be deemed to have been properly given on the date deposited in the mail, if mailed or on the date received, if delivered in any other manner. Legal notices to Pictometry should be sent to Pictometry, Attn: General Counsel, 25 Methodist Hill Drive, Rochester, New York 14623.
- 6.4 The failure of you, Pictometry, or any third party supplier of the WVO Services or any WVO Licensed Content to enforce any provision hereof shall not constitute or be construed as a waiver of such provision or of the right to enforce it at a later time.
- 6.5 You may not assign or otherwise transfer your rights or delegate your duties under this WVO License Agreement without the prior written consent of Pictometry. Any attempt by you to assign, transfer or delegate your rights or obligations under this WVO License Agreement without Pictometry's consent shall be void, and shall also void the limited license granted to you by this WVO License Agreement. This WVO License Agreement and any amendment thereto shall be binding on, and will inure to the benefit of the parties and their respective successors and permitted assigns.
- 6.6 This WVO License Agreement will be enforced to the fullest extent permitted by applicable law. If any provision of this WVO License Agreement is held to be invalid or unenforceable to any extent, then (a) such provision will be interpreted, construed and reformed to the extent reasonably required to render it valid, enforceable and consistent with its original intent and (b) such invalidity or unenforceability will not affect any other provision of this WVO License Agreement.
- 6.7 Where applicable, each affiliated company of Pictometry and each third party supplier of the WVO Services or any WVO Licensed Content has the right to assert and enforce the provisions of this WVO License Agreement directly on its own behalf as a third party beneficiary.

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**[END OF WEB VISUALIZATION OFFERING TERMS AND CONDITIONS]**

## LICENSE TERMS

## PICTOMETRY SOFTWARE

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6. **MISCELLANEOUS PROVISIONS.**
  - A. **Restricted Rights.** Pictometry Software acquired with United States Government funds or intended for use within or for any United States federal agency is provided with "Restricted Rights" as defined in DFARS 252.227-7013, Rights in Technical Data and Computer Software and FAR 52.227-14, Rights in Data-General, including Alternate III, as applicable. Pictometry must be notified in advance of any license grants to United States federal governmental entities. The Pictometry Software is developed for general use in a variety of applications and is not developed or intended for use in any inherently dangerous applications or applications that could lead to property damage, personal injury or death. If you use the Pictometry Software in such applications, then you will be responsible for taking all appropriate fail-safe, backup, redundancy, and other measures to ensure the safe use of the Pictometry Software in such applications, including but not limited to, in any nuclear, aviation, mass transit, public safety or medical applications.
  - B. **Foreign Trade Restrictions.** The parties acknowledge that certain information, software technology, accompanying documentation and technical information may be subject to United States export control laws. You will not directly or indirectly export or re-export the Pictometry Software in violation of the Export Administration Regulations of the U.S. Department of Commerce.
  - C. **Assignment.** You may not assign this License without Pictometry's prior written consent. Any assignment in violation of this License will be null, void and of no force and effect. For all purposes under this License, any

merger, consolidation, spin-off, acquisition or change-in-control will be deemed an assignment.

- D. **Partial Invalidity; Survival.** If any provision of this License is held invalid or unenforceable by competent authority, that provision will be construed so as to be limited or reduced to be enforceable to the maximum extent compatible with the law as it will then appear. The total invalidity or unenforceability of any particular provision of this License will not affect its other provisions and this License will be construed in all respects as if the invalid or unenforceable provision were omitted. The provisions of this License that by their nature would survive its termination will survive indefinitely.
- E. **Force Majeure.** Neither party will be liable for any costs or damages due to nonperformance under this License arising out of any cause not within the reasonable control of such party and without its fault or negligence. Neither party will be liable for any delay or failure in the performance of its obligations under this License that directly results from any failure of the other party to perform its obligations as set forth in this License.
- F. **Waiver.** No waiver of a breach of any term of this License will be effective unless in writing and duly executed by the waiving party. No such waiver will constitute a waiver of any subsequent breach of the same or any other term of this License. No failure on the part of a party to exercise, and no delay in exercising any of its rights hereunder will operate as a waiver thereof, nor will any single or partial exercise by a party of any right preclude any other or future exercise thereof or the exercise of any other right. No course of dealing between the parties will be deemed effective to modify, amend or discharge any part of this License or the rights or obligations of any party hereunder.

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[END OF SOFTWARE LICENSE AGREEMENT]

**Exhibit C – Office of Procurement Services Travel and Per Diem Policy**

- 1.0 All contract-related travel plans and arrangements shall be prior-approved by the County Contract Administrator.
- 2.0 Lodging, per diem and incidental expenses incurred in performance of Maricopa County/Special District (County) contracts shall be reimbursed based on current U.S. General Services Administration (GSA) domestic per diem rates for Phoenix, Arizona. Contractors must access the following internet site to determine rates (no exceptions): [www.gsa.gov](http://www.gsa.gov)
  - 2.1 Additional incidental expenses (i.e., telephone, fax, internet and copying charges) shall not be reimbursed. They should be included in the contractor’s hourly rate as an overhead charge.
  - 2.2 The County will not (under no circumstances) reimburse for Contractor guest lodging, per diem or incidentals.
- 3.0 Commercial air travel shall be reimbursed as follows:
  - 3.1 Coach airfare will be reimbursed by the County. Business class airfare may be allowed only when preapproved in writing by the County Contract Administrator as a result of the business need of the County when there is no lower fare available.
  - 3.2 The lowest direct flight airfare rate from the Contractors assigned duty post (pre-defined at the time of contract signing) will be reimbursed. Under no circumstances will the County reimburse for airfares related to transportation to or from an alternate site.
  - 3.3 The County will not (under no circumstances) reimburse for Contractor guest commercial air travel.
- 4.0 Rental vehicles may only be used if such use would result in an overall reduction in the total cost of the trip, not for the personal convenience of the traveler. Multiple vehicles for the same set of travelers for the same travel period will not be permitted without prior written approval by the County Contract Administrator.
  - 4.1 Purchase of comprehensive and collision liability insurance shall be at the expense of the contractor. The County will not reimburse contractor if the contractor chooses to purchase these coverages.
  - 4.2 Rental vehicles are restricted to sub-compact, compact or mid-size sedans unless a larger vehicle is necessary for cost efficiency due to the number of travelers. (NOTE: contractors shall obtain pre-approval in writing from the County Contract Administrator prior to rental of a larger vehicle.)
  - 4.3 County will reimburse for parking expenses if free, public parking is not available within a reasonable distance of the place of County business. All opportunities must be exhausted prior to securing parking that incurs costs for the County. Opportunities to be reviewed are the DASH; shuttles, etc. that can transport the Contractor to and from County buildings with minimal costs.
  - 4.4 County will reimburse for the lowest rate, long-term uncovered (e.g. covered or enclosed parking will not be reimbursed) airport parking only if it is less expensive than shuttle service to and from the airport.
  - 4.5 The County will not (under no circumstances) reimburse the Contractor for guest vehicle rental(s) or other any transportation costs.
- 5.0 Contractor is responsible for all costs not directly related to the travel except those that have been pre-approved by the County Contract Administrator. These costs include (but are not limited to) the following: in-room movies, valet service, valet parking, laundry service, costs associated with storing luggage at a

hotel, fuel costs associated with non-County activities, tips that exceed the per diem allowance, health club fees, and entertainment costs. Claims for unauthorized travel expenses will not be honored and are not reimbursable.

- 6.0 Travel and per diem expenses shall be capped at 15% of project price unless otherwise specified in individual contracts.
- 7.0 Contractor shall provide, (upon request) with their invoice(s), copies of receipts supporting travel and per diem expenses, and if applicable with a copy of the written consent issued by the Contract Administrator. No travel and per diem expenses shall be paid by County without copies of the written consent as described in this policy and copies of all receipts.

Eff. 08/18/2016

**AMENDMENT No. 1**  
To  
**SERIAL 15056-RFP, Imagery Services**

Between

PICTOMETRY INTERNATIONAL CORP.  
&  
MARICOPA COUNTY, ARIZONA

WHEREAS, Maricopa County, Arizona ("County") and Pictometry International Corp. ("Contractor") have entered into a Contract for the purchase of imagery services, dated October 21, 2015, County Contract No: 15056-RFP ("Agreement").

WHEREAS, County and Pictometry International Corp. have agreed to further modify the Agreement by changing certain terms and conditions;

NOW, THEREFORE, in consideration of the foregoing, and for other good and valuable consideration, receipt of which is hereby acknowledged, the parties hereto agree as follows:

- 1. Additional Products under Exhibit A shall be added to the Agreement,

**Please see Exhibit A, attached hereto for additions.**

**ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED**

**IN WITNESS WHEREOF**, this Amendment No. 1 is executed on the date set forth below when executed by Maricopa County Office of Procurement Services.

Pictometry International Corp.

  
\_\_\_\_\_

Authorized Signature

Linda K. Salpini, Corporate Vice President  
Printed Name and Title

25 Methodist Hill Dr., Rochester, NY 14623  
Address

August 4, 2016  
Date

**MARICOPA COUNTY:**

  
\_\_\_\_\_

Chief Procurement Officer

8/10/16  
\_\_\_\_\_

Date

**EXHIBIT A  
PRODUCTS, PRODUCT DESCRIPTIONS, PRICING AND PRODUCT PARAMETERS &  
SPECIFICATIONS**

The following products, product descriptions, pricing, product parameters & specifications shall be added to Exhibit A of the Contract between Pictometry International Corp. and Maricopa County, dated October 21, 2015:

QTY	PRODUCT NAME	PRODUCT DESCRIPTION	PRICE
1	Survey Report - LiDAR - Tested To Accuracy Statement	Available with 'Survey - LiDAR Project NSSDA Compliant Independent Ground Control Survey'. Product Includes: Report signed/sealed by appropriately licensed surveyor. Report details production statistics and includes an NSSDA compliant "Tested To" accuracy statement.  Applicable Terms and Conditions: Order Form	\$2,000.00
1	LIDAR Hydro Enforcement Breaklines - Pictometry (sq mi)	Area wide polyline files in ESRI Polyline Feature Class format. Available with qualifying LiDAR purchase.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$55.00 <sup>xx</sup>
1	LIDAR DSM - Pictometry (sq mi)	Available with qualifying LiDAR purchase. Gridded first return DSM in ArcGIS GRID format. Refer to attached terms and conditions.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$35.00 <sup>xx</sup>
1	LIDAR Void, Slopes, Intensity Grids - Pictometry (sq mi)	Available with qualifying LiDAR purchase. Void area polygons in ESRI Polygon Feature Class Format. Gridded Slope and Intensity data in ArcGIS GRID format. Refer to attached terms and conditions.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$20.00 <sup>xx</sup>
1	LIDAR-First Return LAS/XYZ (sq mi)	Available with qualifying LiDAR purchase. Pictometry will create a copy of the original dataset containing all first return points in LAS (v1.2) and ASCII XYZI format. Two output files are created and delivered per input LAS tile: first return points in LAS format tiled in same schema as base deliverable data files; first return points in ASCII XYZI format tiled in same schema as base delivered data files.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$5.00 <sup>xx</sup>
1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (3in) Per Sector	Product includes: 3-inch GSD oblique frame images (4-way), 3-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.25 feet/pixel, Nominal Oblique GSD (all values +/-10%): Front Line: 0.24 feet/pixel, Middle Line: 0.28 feet/pixel, Back Line: 0.34 feet/pixel.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$405.00 <sup>xi xii</sup>
1	IMAGERY - NEIGHBORHOOD - 4-way (N5) (4in) Per Sector	Product includes 4-inch GSD oblique frame images (4-way), 4-inch GSD orthogonal frame images, 1-meter GSD ortho mosaic sector tiles and one area-wide 1-meter GSD mosaic (ECW format). Orthogonal GSD: 0.32 feet/pixel, Nominal Oblique GSD (all values +/-10%): Front Line: 0.33 feet/pixel, Middle Line: 0.36 feet/pixel, Back Line: 0.44 feet/pixel.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$360.00 <sup>xi xii</sup>
1	Mosaic - Area Wide (3in GSD; MrSID format; individual) Per Sector	Available with purchase of corresponding tile product. New processing or re-processing to MrSID of individual tiles of 3-inch GSD imagery. Tiles are provided "as is." Refer to Product Parameters for additional details.  Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$2.00 <sup>xi xiii</sup>
1	Mosaic - Area Wide (4in GSD; MrSID format; individual) Per Sector	Available with purchase of corresponding tile product. New processing or re-processing to MrSID of individual tiles of 4-inch GSD imagery. Tiles are provided "as is." Refer to Product	\$2.00 <sup>xi xiii</sup>

		Parameters for additional details. Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	
1	Tiles - Standard (3in GSD; TIFF format) Per Sector	Available with corresponding 3" GSD imagery purchase. 3-inch GSD Mosaic Tiles in TIFF Format. Tiles are provided "as is." Refer to Product Parameters for additional details. Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$10.00 <sup>xi</sup> <sup>xiii</sup>
1	Tiles - Standard (4in GSD; TIFF format) Per Sector	Available with corresponding 3" GSD or 4" GSD imagery purchase. 4-inch GSD Mosaic Tiles in TIFF Format. Tiles are provided "as is." Refer to Product Parameters for additional details. Applicable Terms and Conditions: Delivered Content Terms and Conditions of Use	\$10.00 <sup>xi</sup> <sup>xiii</sup>

The following products, product descriptions, pricing, product parameters & specifications shall replace the corresponding products in Exhibit A of the Contract between Pictometry International Corp. and Maricopa County, dated October 21, 2015:

1	FutureView Advanced Training (Full 2017)	Full conference registration to advanced training designed to maximize deployment. Includes airfare, hotel room for up to three nights, event registration, and round-trip airfare up to \$500. Customer will be provided with discount code to complete FutureView registration. (Air Travel Restrictions - 30 day advance purchase for airfare, per person round trip airfare at standard coach class rates through Pictometry's travel provider only.) Must be redeemed within three years of agreement execution date. Applicable Terms and Conditions: Order Form	\$2,499.00
1	FutureView Advanced Training (Conference Only 2017)	Conference registration to advanced training designed to maximize deployment. Includes event registration (no airfare or hotel). Must be redeemed within three years of agreement execution date. Applicable Terms and Conditions: Order Form	\$699.00

<sup>xi</sup> Requires minimum purchase of 500 contiguous square miles.

<sup>xii</sup> Standard imagery product.

<sup>xiii</sup> Must be purchased in conjunction with standard imagery product.

**PHOTOGRAMMETRIC PRODUCT SPECIFICATIONS**

**LIDAR HYDRO ENFORCEMENT BREAKLINES**

Pictometry will generate additional detailed hydrographic vector data from available digital imagery, elevation and vector GIS data. The reference data for this mapping effort will be the National Hydrography Dataset (NHD). The primary method for developing these data will be to map the location of the breaklines from the LiDAR data directly using best available aerial photography as a reference. The location of the edge of the water depends on seasonal water levels at the time of data collection. Water levels will be mapped according to levels indicated in the LiDAR data.

Additional hydrographic breaklines will be developed as follows:

- Stream Centerlines: For streams identifiable from the LiDAR data and/or the Orthophotography at a scale of 1:1000. These are commonly referred to as "single line streams" in NHD.
- Edge of Water: For streams with identifiable water 5m across or ponds exceeding 1 acre.

All stream center lines and edge of water lines will have monotonicity (continuous downward slope) enforced.

**DSM (REFLECTIVE SURFACE)**

Pictometry will convert the data contained in the LAS files to a raster based Digital Surface Model (DSM) representing a "first surface" detected by the sensor. This first surface is represented by both bare ground in open terrain, as well as the tops of trees and buildings in areas with significant non-ground features. The elevation value of each cell in the raster dataset will represent the highest elevation value of points that fall within that cell. This surface model will not include the development or use of additional breaklines beyond that which are included with the bare earth data.

**Deliverables:**

Collection-wide DSM in ArcGIS GRID format with 10 foot grid cell size unless otherwise specified by the Customer.

**Void Area Mapping**

Pictometry anticipates that there will be a range of void areas on the bare earth data as a result of non-ground feature removal or absorption by water. Pictometry will derive void area polygons from the Bare Earth point data. This ancillary deliverable is particularly useful for the Customer to have as a legacy of the collection to better understand and articulate the limitations and assumptions (i.e., interpolation) that are inherent in the derived data products. In accordance with both FEMA guidelines and the USGS Specifications, voids areas will be mapped as follows:

Data Type	Criteria
Bare Earth Data	≤10m GRID (100m <sup>2</sup> )
First Return Data	<8m GRID (64m <sup>2</sup> )

FEMA guidelines indicate that void areas greater than one (1) acre occurring in the floodplains may require additional ground survey, independent of the overall collection statistics. As such Pictometry will attribute the land cover for Bare Earth void polygons larger than one acre. **Deliverable:** Collection-wide Void Area polygon data in ESRI Polygon Feature Class format.

**SLOPE DATA**

Pictometry will derive percent rise and degree slope GRIDS from the DEM data developed above. The extent will be the same as the source DEM with values for slope. **Deliverable:** Slope data in ArcGIS GRID format.

**INTENSITY DATA**

Pictometry will develop intensity grids from the data contained in the LAS files. This data is particularly useful for customers to use in urban planning and hydrologic applications such as evaluating land cover types, impervious surface areas and changes in the landscape. The data will be tiled to the original LiDAR tiles, in ESRI GRID format with a grid cell size corresponding to the average post spacing of the all points LiDAR data unless otherwise specified by the Customer. Pictometry will interpolate across voids unless the customer specifies otherwise. A raster catalog will also be included of all the tiles. **Deliverable:** Tiled Intensity data in ArcGIS Grid format unless otherwise specified. ESRI raster catalog of all the tiles.

PICTOMETRY INTERNATIONAL CORP., 25 METHODIST HILL DR., 100 TOWN CENTRE  
ROCHESTER, NY 14623

PRICING SHEET: NIGP CODE 90504

Terms: NET 30

Vendor Number: ~~2011001868-0~~ **V000001650**

Certificates of Insurance Required

Contract Period: To cover the period ending **October 31, 2016 2017**.