

**AGREEMENT BETWEEN THE COUNTY OF SAN MATEO AND
THE SANBORN MAP COMPANY, INC.**

This Agreement is entered into this _____ day of _____, 20____, by and between the County of San Mateo, a political subdivision of the state of California, hereinafter called "County," and The Sanborn Map Company, Inc., hereinafter called "Contractor."

* * *

Whereas, pursuant to Section 31000 of the California Government Code County may contract with independent contractors for the furnishing of such services to or for County or any Department thereof; and

Whereas, it is necessary and desirable that Contractor be retained for the purpose of providing aerial imagery and high resolution light detection and ranging (LiDAR) data acquisition services.

Now, therefore, it is agreed by the parties to this Agreement as follows:

1. Exhibits and Attachments

The following exhibits and attachments are attached to this Agreement and incorporated into this Agreement by this reference:

Exhibit A—Services
Exhibit B—Payments and Rates
Attachment IP – Intellectual Property

2. Services to be performed by Contractor

In consideration of the payments set forth in this Agreement and in Exhibit B, Contractor shall perform services for County in accordance with the terms, conditions, and specifications set forth in this Agreement and in Exhibit A.

3. Payments

In consideration of the services provided by Contractor in accordance with all terms, conditions, and specifications set forth in this Agreement and in Exhibit A, County shall make payment to Contractor based on the rates and in the manner specified in Exhibit B. County reserves the right to withhold payment if County determines that the quantity or quality of the work performed is unacceptable. In no event shall County's total fiscal obligation under this Agreement exceed Two Hundred Fifty Three Thousand Four Hundred Thirty Dollars and Twenty Eight Cents (\$253,430.28). In the event that the County makes any advance payments, Contractor agrees to refund any amounts in excess of the amount owed by the County at the time of contract termination or expiration. Contractor is not entitled to payment for work not performed as required by this agreement.

4. Term

Subject to compliance with all terms and conditions, the term of this Agreement shall be from March 14, 2017 through December 31, 2017.

5. Termination

This Agreement may be terminated by Contractor or by the County's Information Services Department's Chief Information Officer/Director or his/her designee at any time without a requirement of good cause upon thirty (30) days' advance written notice to the other party. Subject to availability of funding, Contractor shall be entitled to receive payment for work/services provided prior to termination of the Agreement. Such payment shall be that prorated portion of the full payment determined by comparing the work/services actually completed to the work/services required by the Agreement.

County may terminate this Agreement or a portion of the services referenced in the Attachments and Exhibits based upon the unavailability of Federal, State, or County funds by providing written notice to Contractor as soon as is reasonably possible after County learns of said unavailability of outside funding.

County may terminate this Agreement for cause. In order to terminate for cause, County must first give Contractor notice of the alleged breach. Contractor shall have five business days after receipt of such notice to respond and a total of thirty calendar days after receipt of such notice to cure the alleged breach. If Contractor fails to cure the breach within this period, County may immediately terminate this Agreement without further action. The option available in this paragraph is separate from the ability to terminate without cause with appropriate notice described above. In the event that County provides notice of an alleged breach pursuant to this section, County may, in extreme circumstances, immediately suspend performance of services and payment under this Agreement pending the resolution of the process described in this paragraph. County has sole discretion to determine what constitutes an extreme circumstance for purposes of this paragraph, and County shall use reasonable judgment in making that determination.

6. Contract Materials

At the end of this Agreement, or in the event of termination, all finished or unfinished documents, data, studies, maps, photographs, reports, and other written materials (collectively referred to as "contract materials") prepared by Contractor under this Agreement shall become the property of County and shall be promptly delivered to County. Upon termination, Contractor may make and retain a copy of such contract materials if permitted by law.

7. Relationship of Parties

Contractor agrees and understands that the work/services performed under this Agreement are performed as an independent contractor and not as an employee of County and that neither Contractor nor its employees acquire any of the rights, privileges, powers, or advantages of County employees.

8. Hold Harmless

a. General Hold Harmless

Contractor shall indemnify and save harmless County and its officers, agents, employees, and servants from all claims, suits, or actions of every name, kind, and description resulting from this Agreement, the performance of any work or services required of Contractor under this Agreement, or payments made pursuant to this Agreement brought for, or on account of, any of the following:

- (A) injuries to or death of any person, including Contractor or its employees/officers/agents;
- (B) damage to any property of any kind whatsoever and to whomsoever belonging;

(C) any sanctions, penalties, or claims of damages resulting from Contractor's failure to comply, if applicable, with the requirements set forth in the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and all Federal regulations promulgated thereunder, as amended; or

(D) any other loss or cost, including but not limited to that caused by the concurrent active or passive negligence of County and/or its officers, agents, employees, or servants. However, Contractor's duty to indemnify and save harmless under this Section shall not apply to injuries or damage for which County has been found in a court of competent jurisdiction to be solely liable by reason of its own negligence or willful misconduct.

The duty of Contractor to indemnify and save harmless as set forth by this Section shall include the duty to defend as set forth in Section 2778 of the California Civil Code.

b. Intellectual Property Indemnification

Contractor hereby certifies that it owns, controls, and/or licenses and retains all right, title, and/or interest in and to any intellectual property it uses in relation to this Agreement, including the design, look, feel, features, source code, content, and/or other technology relating to any part of the services it provides under this Agreement and including all related patents, inventions, trademarks, and copyrights, all applications therefor, and all trade names, service marks, know how, and trade secrets (collectively referred to as "IP Rights") except as otherwise noted by this Agreement.

Contractor warrants that the services it provides under this Agreement do not infringe, violate, trespass, or constitute the unauthorized use or misappropriation of any IP Rights of any third party. Contractor shall defend, indemnify, and hold harmless County from and against all liabilities, costs, damages, losses, and expenses (including reasonable attorney fees) arising out of or related to any claim by a third party that the services provided under this Agreement infringe or violate any third-party's IP Rights provided any such right is enforceable in the United States. Contractor's duty to defend, indemnify, and hold harmless under this Section applies only provided that: (a) County notifies Contractor promptly in writing of any notice of any such third-party claim; (b) County cooperates with Contractor, at Contractor's expense, in all reasonable respects in connection with the investigation and defense of any such third-party claim; (c) Contractor retains sole control of the defense of any action on any such claim and all negotiations for its settlement or compromise (provided Contractor shall not have the right to settle any criminal action, suit, or proceeding without County's prior written consent, not to be unreasonably withheld, and provided further that any settlement permitted under this Section shall not impose any financial or other obligation on County, impair any right of County, or contain any stipulation, admission, or acknowledgement of wrongdoing on the part of County without County's prior written consent, not to be unreasonably withheld); and (d) should services under this Agreement become, or in Contractor's opinion be likely to become, the subject of such a claim, or in the event such a third party claim or threatened claim causes County's reasonable use of the services under this Agreement to be seriously endangered or disrupted, Contractor shall, at Contractor's option and expense, either: (i) procure for County the right to continue using the services without infringement or (ii) replace or modify the services so that they become non-infringing but remain functionally equivalent.

Notwithstanding anything in this Section to the contrary, Contractor will have no obligation or liability to County under this Section to the extent any otherwise covered claim is based upon: (a) any aspects of the services under this Agreement which have been modified by or for County (other than modification performed by, or at the direction of, Contractor) in such a way as to cause the alleged infringement at issue; and/or (b) any aspects of the services under this Agreement which have been used by County in a manner prohibited by this Agreement.

The duty of Contractor to indemnify and save harmless as set forth by this Section shall include the duty to defend as set forth in Section 2778 of the California Civil Code.

9. Assignability and Subcontracting

Contractor shall not assign this Agreement or any portion of it to a third party or subcontract with a third party to provide services required by Contractor under this Agreement without the prior written consent of County. Any such assignment or subcontract without County's prior written consent shall give County the right to automatically and immediately terminate this Agreement without penalty or advance notice.

10. Insurance

a. General Requirements

Contractor shall not commence work or be required to commence work under this Agreement unless and until all insurance required under this Section has been obtained and such insurance has been approved by County's Risk Management, and Contractor shall use diligence to obtain such insurance and to obtain such approval. Contractor shall furnish County with certificates of insurance evidencing the required coverage, and there shall be a specific contractual liability endorsement extending Contractor's coverage to include the contractual liability assumed by Contractor pursuant to this Agreement. These certificates shall specify or be endorsed to provide that thirty (30) days' notice must be given, in writing, to County of any pending change in the limits of liability or of any cancellation or modification of the policy.

b. Workers' Compensation and Employer's Liability Insurance

Contractor shall have in effect during the entire term of this Agreement workers' compensation and employer's liability insurance providing full statutory coverage. In signing this Agreement, Contractor certifies, as required by Section 1861 of the California Labor Code, that (a) it is aware of the provisions of Section 3700 of the California Labor Code, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of the Labor Code, and (b) it will comply with such provisions before commencing the performance of work under this Agreement.

c. Liability Insurance

Contractor shall take out and maintain during the term of this Agreement such bodily injury liability and property damage liability insurance as shall protect Contractor and all of its employees/officers/agents while performing work covered by this Agreement from any and all claims for damages for bodily injury, including accidental death, as well as any and all claims for property damage which may arise from Contractor's operations under this Agreement, whether such operations be by Contractor, any subcontractor, anyone directly or indirectly employed by either of them, or an agent of either of them. Such insurance shall be combined single limit bodily injury and property damage for each occurrence and shall not be less than the amounts specified below:

- (a) Comprehensive General Liability... \$1,000,000
- (b) Motor Vehicle Liability Insurance... \$1,000,000

County and its officers, agents, employees, and servants shall be named as additional insured on any such policies of insurance, which shall also contain a provision that (a) the insurance afforded thereby to

County and its officers, agents, employees, and servants shall be primary insurance to the full limits of liability of the policy and (b) if the County or its officers, agents, employees, and servants have other insurance against the loss covered by such a policy, such other insurance shall be excess insurance only.

In the event of the breach of any provision of this Section, or in the event any notice is received which indicates any required insurance coverage will be diminished or canceled, County, at its option, may, notwithstanding any other provision of this Agreement to the contrary, immediately declare a material breach of this Agreement and suspend all further work and payment pursuant to this Agreement.

11. Compliance With Laws

All services to be performed by Contractor pursuant to this Agreement shall be performed in accordance with all applicable Federal, State, County, and municipal laws, ordinances, and regulations, including but not limited to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and the Federal Regulations promulgated thereunder, as amended (if applicable), the Business Associate requirements set forth in Attachment H (if attached), the Americans with Disabilities Act of 1990, as amended, and Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of disability in programs and activities receiving any Federal or County financial assistance. Such services shall also be performed in accordance with all applicable ordinances and regulations, including but not limited to appropriate licensure, certification regulations, provisions pertaining to confidentiality of records, and applicable quality assurance regulations. In the event of a conflict between the terms of this Agreement and any applicable State, Federal, County, or municipal law or regulation, the requirements of the applicable law or regulation will take precedence over the requirements set forth in this Agreement.

Contractor will timely and accurately complete, sign, and submit all necessary documentation of compliance.

12. Non-Discrimination and Other Requirements

a. General Non-discrimination

No person shall be denied any services provided pursuant to this Agreement (except as limited by the scope of services) on the grounds of race, color, national origin, ancestry, age, disability (physical or mental), sex, sexual orientation, gender identity, marital or domestic partner status, religion, political beliefs or affiliation, familial or parental status (including pregnancy), medical condition (cancer-related), military service, or genetic information.

b. Equal Employment Opportunity

Contractor shall ensure equal employment opportunity based on objective standards of recruitment, classification, selection, promotion, compensation, performance evaluation, and management relations for all employees under this Agreement. Contractor's equal employment policies shall be made available to County upon request.

c. Section 504 of the Rehabilitation Act of 1973

Contractor shall comply with Section 504 of the Rehabilitation Act of 1973, as amended, which provides that no otherwise qualified individual with a disability shall, solely by reason of a disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination in the performance of any services this Agreement. This Section applies only to contractors who are providing services to members of the public under this Agreement.

d. Compliance with County's Equal Benefits Ordinance

Contractor shall comply with all laws relating to the provision of benefits to its employees and their spouses or domestic partners, including, but not limited to, such laws prohibiting discrimination in the provision of such benefits on the basis that the spouse or domestic partner of the Contractor's employee is of the same or opposite sex as the employee.

e. Discrimination Against Individuals with Disabilities

The nondiscrimination requirements of 41 C.F.R. 60-741.5(a) are incorporated into this Agreement as if fully set forth here, and Contractor and any subcontractor shall abide by the requirements of 41 C.F.R. 60-741.5(a). This regulation prohibits discrimination against qualified individuals on the basis of disability and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

f. History of Discrimination

Contractor certifies that no finding of discrimination has been issued in the past 365 days against Contractor by the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or any other investigative entity. If any finding(s) of discrimination have been issued against Contractor within the past 365 days by the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or other investigative entity, Contractor shall provide County with a written explanation of the outcome(s) or remedy for the discrimination prior to execution of this Agreement. Failure to comply with this Section shall constitute a material breach of this Agreement and subjects the Agreement to immediate termination at the sole option of the County.

g. Reporting; Violation of Non-discrimination Provisions

Contractor shall report to the County Manager the filing in any court or with any administrative agency of any complaint or allegation of discrimination on any of the bases prohibited by this Section of the Agreement or the Section titled "Compliance with Laws". Such duty shall include reporting of the filing of any and all charges with the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or any other entity charged with the investigation or adjudication of allegations covered by this subsection within 30 days of such filing, provided that within such 30 days such entity has not notified Contractor that such charges are dismissed or otherwise unfounded. Such notification shall include a general description of the circumstances involved and a general description of the kind of discrimination alleged (for example, gender-, sexual orientation-, religion-, or race-based discrimination).

Violation of the non-discrimination provisions of this Agreement shall be considered a breach of this Agreement and subject the Contractor to penalties, to be determined by the County Manager, including but not limited to the following:

- i. termination of this Agreement;
- ii. disqualification of the Contractor from being considered for or being awarded a County contract for a period of up to 3 years;
- iii. liquidated damages of \$2,500 per violation; and/or
- iv. imposition of other appropriate contractual and civil remedies and sanctions, as determined by the County Manager.

To effectuate the provisions of this Section, the County Manager shall have the authority to offset all or any portion of the amount described in this Section against amounts due to Contractor under this Agreement or any other agreement between Contractor and County.

13. Compliance with County Employee Jury Service Ordinance

Contractor shall comply with Chapter 2.85 of the County's Ordinance Code, which states that Contractor shall have and adhere to a written policy providing that its employees, to the extent they are full-time employees and live in San Mateo County, shall receive from the Contractor, on an annual basis, no fewer than five days of regular pay for jury service in San Mateo County, with jury pay being provided only for each day of actual jury service. The policy may provide that such employees deposit any fees received for such jury service with Contractor or that the Contractor may deduct from an employee's regular pay the fees received for jury service in San Mateo County. By signing this Agreement, Contractor certifies that it has and adheres to a policy consistent with Chapter 2.85. For purposes of this Section, if Contractor has no employees in San Mateo County, it is sufficient for Contractor to provide the following written statement to County: "For purposes of San Mateo County's jury service ordinance, Contractor certifies that it has no full-time employees who live in San Mateo County. To the extent that it hires any such employees during the term of its Agreement with San Mateo County, Contractor shall adopt a policy that complies with Chapter 2.85 of the County's Ordinance Code." The requirements of Chapter 2.85 do not apply if this Agreement's total value listed in the Section titled "Payments", is less than one-hundred thousand dollars (\$100,000), but Contractor acknowledges that Chapter 2.85's requirements will apply if this Agreement is amended such that its total value meets or exceeds that threshold amount.

14. Retention of Records; Right to Monitor and Audit

(a) Contractor shall maintain all required records relating to services provided under this Agreement for three (3) years after County makes final payment and all other pending matters are closed, and Contractor shall be subject to the examination and/or audit by County, a Federal grantor agency, and the State of California.

(b) Contractor shall comply with all program and fiscal reporting requirements set forth by applicable Federal, State, and local agencies and as required by County.

(c) Contractor agrees upon reasonable notice to provide to County, to any Federal or State department having monitoring or review authority, to County's authorized representative, and/or to any of their respective audit agencies access to and the right to examine all records and documents necessary to determine compliance with relevant Federal, State, and local statutes, rules, and regulations, to determine compliance with this Agreement, and to evaluate the quality, appropriateness, and timeliness of services performed.

15. Merger Clause; Amendments

This Agreement, including the Exhibits and Attachments attached to this Agreement and incorporated by reference, constitutes the sole Agreement of the parties to this Agreement and correctly states the rights, duties, and obligations of each party as of this document's date. In the event that any term, condition, provision, requirement, or specification set forth in the body of this Agreement conflicts with or is inconsistent with any term, condition, provision, requirement, or specification in any Exhibit and/or Attachment to this Agreement, the provisions of the body of the Agreement shall prevail. Any prior agreement, promises, negotiations, or representations between the parties not expressly stated in this document are not binding. All subsequent modifications or amendments shall be in writing and signed by the parties.

16. Controlling Law; Venue

The validity of this Agreement and of its terms, the rights and duties of the parties under this Agreement, the interpretation of this Agreement, the performance of this Agreement, and any other dispute of any nature arising out of this Agreement shall be governed by the laws of the State of California without regard to its choice of law or conflict of law rules. Any dispute arising out of this Agreement shall be venued either in the San Mateo County Superior Court or in the United States District Court for the Northern District of California.

17. Notices

Any notice, request, demand, or other communication required or permitted under this Agreement shall be deemed to be properly given when both: (1) transmitted via facsimile to the telephone number listed below or transmitted via email to the email address listed below; and (2) sent to the physical address listed below by either being deposited in the United States mail, postage prepaid, or deposited for overnight delivery, charges prepaid, with an established overnight courier that provides a tracking number showing confirmation of receipt.

In the case of County, to:

Name/Title: Jon Walton, Chief Information Officer/Director, ISD
Address: 455 County Center, 3rd Floor, Redwood City, CA 94063
Telephone: (650) 599-1284
Facsimile: (650) 363-7800
Email: jwalton@smcgov.org

In the case of Contractor, to:

Name/Title: Amy Kappel
Address: 1935 Jamboree Drive, Suite 100 Colorado Springs, Colorado 80920
Telephone: (719) 264-5510
Facsimile: (719) 528-5093
Email: akappel@sanborn.com

18. Electronic Signature

Both County and Contractor wish to permit this Agreement and future documents relating to this Agreement to be digitally signed in accordance with California law and County's Electronic Signature Administrative Memo. Any party to this Agreement may revoke such agreement to permit electronic signatures at any time in relation to all future documents by providing notice pursuant to this Agreement.

19. Payment of Permits/Licenses

Contractor bears responsibility to obtain any license, permit, or approval required from any agency for work/services to be performed under this Agreement at Contractor's own expense prior to commencement of said work/services. Failure to do so will result in forfeit of any right to compensation under this Agreement.

* * *

In witness of and in agreement with this Agreement's terms, the parties, by their duly authorized representatives, affix their respective signatures:

For Contractor: **THE SANBORN MAP COMPANY, INC.**

John R. Copple
Contractor Signature

February 9, 2017
Date

John R. Copple, President/CEO
Contractor Name (please print)

COUNTY OF SAN MATEO

By:

President, Board of Supervisors, San Mateo County

Date:

ATTEST:

By:

Clerk of Said Board

Exhibit A

In consideration of the payments set forth in Exhibit B, Contractor shall provide the following services:

Contractor is to provide aerial imagery and high resolution light detection and ranging (LiDAR) data collections services.

Services for the project shall be conducted in two (2) phases which are summarized below.

- Phase 1 shall cover the orthoimagery portion of the project. Phase 2 is required and Contractor will not produce orthos until LiDAR is collected in Phase 2.
- Phase 2 shall cover the LiDAR portion of this project.

PHASE 1

Data Acquisition Specifications

Contractor shall furnish all materials, supervision, labor, equipment, and transportation, unless otherwise specified under this Exhibit A to complete the following tasks and deliver the listed products.

Imagery Acquisition Specifications	
GSD	6-inch
Proposed Sensor	UltraCam Eagle
Focal Length	100.5 mm
Flying Height Proposed	9,466' AGL
Aircraft Speed	175 kts
Sidelap	30%
Endlap	60%
Sensor Platform	Multi-Engine Fixed-Wing Aircraft
Radiometry	4-band, 14-bit per channel RGB/NIR
Acquisition Date	Late Summer, Early Fall 2016
Acquisition Time	~10am – 2pm (PDT)
Sun Angle	35 degrees or greater in downtown area and 30 degrees or greater for rest of AOI
Conditions	Snow free, no flooding, no ice on water bodies. No clouds, cloud shadows, haze, smoke, precipitation, or other ground obscuring conditions on more than 0% of imagery.

Flight Planning

Contractor shall be responsible for applying for, and obtaining, any required permits for access, overflight, or intrusion into, restricted or otherwise limited ground access and/or airspace, which may be included within the requirement of this agreement.

Prior to each flight, Contractor shall prepare a digital flight plan showing the planned flight lines and the project areas to be covered. This flight plan shall be delivered to the County in ESRI shapefile or feature class format.

Due to the extent of the area and window of time available to collect the imagery & LiDAR meeting the specific criteria set forth herein, multiple airplanes may be used.

Ortho Imagery Overlap

All orthorectification related imagery acquisition will have a minimum of 35% (+/-5%) side lap and 60% (+/-5%) end lap. All imagery must be acquired with adequate overlapping coverage for orthorectification, so that building lean in urban areas area minimized. Additional coverage must be captured over urban core areas and mountain areas to ensure that no more than 25% of roadways features are obscured in urban areas and valley bottoms are visible in the mountains.

Collection Window and Conditions

Imagery and LiDAR shall not be acquired when the ground is obscured by haze, snow, smoke, dust, floodwaters, or environmental factors that may obscure ground detail.

There shall be less than 5% cloud cover and/or shadows in the imagery. The solar altitude during image collection flights should not be less than 35 degrees in downtown area and not less than 30 degrees for rest of area of interest (AOI).

Re-flights

Contractor, at no additional cost to the County, shall re-fly and re-acquire aerial data that does not meet the required specifications. The re-flight shall overlap the accepted aerial imagery by at least two (2) stereo models and must meet the criteria specified in the "Collection Window and Conditions" section.

Ground Control

Contractor is responsible for developing ground control which is deemed necessary to perform the photogrammetric mapping in support of orthoimagery products. The control survey shall be completed according to current industry best practices. The ground control must be set and maintained at the proper density and positional accuracy to support the project's accuracy specifications that are outlined in this agreement.

Any survey control that is developed for the project shall be provided to the County and must adhere to the following conditions:

- Each ground control survey point shall be a well-defined horizontal and/or vertical point.
- Horizontal and vertical accuracy for Contractor-developed survey control will be reported to the County's Project Manager.
- All control points shall be either well-defined ground features or field targets.

PRODUCTION SPECIFICATIONS

Projection and Coordinate Systems

All data will be delivered in **California State Plane Zone III North. The horizontal datum will be the most current NAD83 Realization, presently NAD83 (CORS96); epoch 2002.0. All vertical control will be referenced to the National Geodetic Vertical Datum of 1988 using the most current National Geodetic Survey (NGS) Geoid Model, presently GEOID12A. The unit of measurement will be the US survey foot.**

Pilot Areas

The County will select four (4) square miles pilot area that will tie back to the project tiling index. Contractor shall provide ortho-imagery deliverables, subject to all the specifications herein as applicable, and gain approval from the County for this work prior to moving forward with the processing of all the final orthoimagery.

Metadata

Project-level Federal Geographic Data Committee (FGDC)-compliant metadata in XML format shall be provided. The tiling index shapefile or feature class shall be attributed so that every tile has a name and a collection date and time stamp.

Quality Assurance (QA)/Quality Control (QC) and Coordination with Contractor

All data (imagery as well as all associated data products) will be subject to a rigorous review process against defined acceptance criteria. This process will verify the positional accuracy of the data, and ensure its aesthetic and functional quality. The County will conduct this quality control review in accordance with the specifications set out in Acceptance Criteria, as further described in detail below.

Ortho Imagery Specifications

Digital Orthorectified Imagery	
Criteria	Minimum Specifications
Coordinate System	CA State Plane III (Feet)
Datum	NAD83 (2007), NAVD88
Resolution	Six-inch (6") pixel
Type	Digital, true-color, 24-bit RGB (256 levels of value for each color band)
Rectification	Overpasses/bridges along roadways shall retain correct horizontal location and geometry. Features (especially roads under the overpass) that approach the underside of the overpass/bridge shall be rectified to their correct ground locations.
Image Color/Tonal Balance	Consistent in contrast, color, and brightness Minimize sun flares with no smearing Use "cool-tone" green hue to highlight infrastructure features
Digital Elevation Model (DEM)	Use the DEM developed through the newly acquired LiDAR data for this project during Phase 2. The contributing data sources must be referenced in the metadata.
Mosaicking	No pixel gaps between frames. No cross through mosaic lines on buildings, bridges or other fabricated structures not at ground level. Minimize tonal variations and visible join lines on overlapping images.
Ortho Tile Grid Size	3000'x 2000'
Tiling Scheme	A single, non-overlapping tiling scheme has been established for the County (shapefile has been made available with the RFP). The "Name" field in the attribute table indicates the names to be used for each tile *.tif image file, TFW geo-referencing "world" file, and each individual MrSID file.
Accuracy Standard	Equal to or greater than ASPRS Class I (1' RMSE) Accuracy standard for maps at 1" = 100'
Deliverable Image Format(s)	Orthoimagery tiles in Geotiff (*.tif) and MrSID *.sid format with a compression ratio of 20:1, MrSID mosaic for entire County
Metadata	FGDC compliant metadata files for each image tile (*.xml or other approved format)

Image Processing & Delivery

Orthoimagery tiles in TIFF and MrSID formats shall be cut and named according to a tile grid provided by County. The County will provide a tiling index to the Contractor that specifies geometries and attribution for the tiles.

Tonal/Color Balancing

Orthorectified imagery tiles should be tonally balanced prior to generation of an image mosaic. Adjacent images will be tone and contrast matched. Localized adjustments of brightness values will be done to reduce tonal differences between images. Brightness values should be an even gradation of color levels over the full range from 0 to 255 for optimal computer monitor/screen display. Contractor will use "cool-tone" green hue to highlight infrastructure features.

Image File Formats

Imagery tiles based on the required tiling index must be delivered in the following formats.

- GeoTIFF (no compression) with associated world file (.tfw) (4band)
- 6" MrSID (*.sid) orthoimagery tiles, tiled by tiling scheme provided
- MrSID (*.sid) County-wide mosaic, 1 total

Digital Elevation Models

Contractor will generate the DEM from the new LiDAR (as a part of the scope of this program in Phase 2). The DEM should support creation of imagery that meets the accuracy standards outlined in this agreement.

Ortho Acceptance Criteria

In general terms, this Ortho Acceptance Criteria review will identify the following:

- Products that do not meet the project's accuracy specifications.
- Misalignments in linear features (roads/curbs/building edges etc.) resulting from poorly aligned mosaic portions.
- Warped bridges/overpasses/viaducts.
- Obvious seams between images (in all file formats).
- Blurred or out-of-focus imagery.
- Stark changes in color balance and contrast.
- Stark shadows or bright spots in the imagery.
- Clouds or cloud shadow covering more than 5% of any image tile.
- Buildings that obscure more than 25 percent of adjacent roadways
- Obscured valley bottoms in the mountains.

In addition, the Acceptance Criteria review process will examine all other data produced as part of the imagery production process. This will include the following:

- Validating correct file formats and versions;
- Reviewing all associated meta data records;
- Reviewing Digital Terrain Model (DTM) data including mass points and breaklines data, derivative DEMs, and other ground control source data; and
- Reviewing all calibration and analytical reports produced by the Contractor.

Conditionally approved or rejected data will be returned to the Contractor for subsequent correction. Within 30 days, the Contractor shall correct all identified errors, review the remaining data for errors, and the report all error corrections made, based on the review.

PROJECT MANAGEMENT REPORTING & CUSTOMER SERVICE

Prior to mobilization of aircraft, Contractor must prepare draft orthoimagery flight documents, which shall be subject to the County review and approval. Throughout the course of the project, the Contractor's Account and Project Management Personnel will ensure timely, accurate and complete reporting of all key events and activities.

Other Program Management functions include (but are not limited to):

- Daily status reports during the acquisition of orthoimagery
- Monthly status reports to the County's Project Manager
- Status calls can also be held with the County to coordinate project activities and to review open issues noted in the status report. Exact times will be established with the County during the project initiation meetings.
- Project kick-off and project close-out meetings held via conference call.
- Invoices, submitted according to Purchase Order Issued by County.

PROJECT DELIVERABLES

The table below summarizes the list of all the orthoimagery deliverables on the program for Phase 1:

Summary of Deliverables	
Deliverable	Description
Phase 1 Deliverables	
Project Control	Contractor shall submit a comprehensive survey report documenting the survey in PDF format, and an Esri Shapefile with all of the coordinate data.
Flight Plans	Contractor shall deliver the final flight line map/photo index with photo centers in Esri Shapefile and Adobe PDF formats.
Flight completion report	Contractor shall deliver a flight completion report.
The below deliverables will be delivered as part of Phase 2 Deliverables	
Deliverable	Description
Aerial Triangulation (AT)	Contractor will provide a fully-indexed AT report that will provide a narrative description of all aspects of the AT phase, tabular information for ground control and check point results, and appendices including full AT solution printouts. An Adobe .PDF version of the report and a Microsoft Excel file with the point coordinates will be provided as well.
Digital Orthophotography	Contractor will provide a copy of all orthoimagery tiles at the desired spatial resolution of 6-inches in .TIFF/.TIFW format, and MrSID .SID/.SDW format with 20:1 compression. Radiometry will be 3-band, 8-bit per channel RGB.
MrSID Mosaics	MrSID County-wide mosaic will be provided for counties or municipalities in .SID/.SDW format with 20:1 compression. Radiometry will be 3-band, 8-bit per channel RGB.
Tile Index	Contractor will provide the final tile layout in Esri Geodatabase format.
Metadata	Contractor will provide FGDC compliant metadata for each image tile and LiDAR product in .xml format.
Project Documentation	Contractor will provide to the County a copy of all required project documentation including reports regarding aircraft and camera operation, calibration reports, QA/QC reports, and management & administrative documents.

Estimated Project Schedule

6-inch orthoimagery and LiDAR		
Task Name	Start	Finish
Contract Execution-	3/14/2017	3/15/2017
Project Kickoff Meeting	3/20/2017	3/20/2017
Data Acquisition Collection (weather permitting)		4/30/2017
Ortho Pilot Delivery	06/16/2017	06/16/2017
LiDAR Pilot Delivery	06/16/2017	06/16/2017
Full Ortho delivery	07/18/2017	07/18/2017
Full LiDAR Delivery	07/18/2017	07/18/2017
County QC	07/19/2017	08/02/2017
Final Delivery	08/21/2017	08/21/2017

The project schedule is estimated and is subject to delays and/or rescheduling due to events of Force Majeure. Force Majeure shall mean any events or actions beyond the reasonable control of Contractor preventing or delaying the execution of or compliance with any of the terms and conditions contained in this Scope of Work including, but not limited to: unpredictable or natural events; governmental regulations, including the restrictions imposed by air traffic control personnel with authority over airspace required for flight operations, restricting normal operations; and, weather, atmospheric or ground conditions that are not conducive for the collection of aerial imagery or terrain data in a manner that is necessary to meet or exceed the requirements of any deliverable. If and to the extent that Contractor suffers a delay as a result of an event of Force Majeure, then it shall be entitled to a project schedule extension by a period of time equal to the period of interruption caused by the Force Majeure event.

PHASE 2

LiDAR Data Acquisition Specifications

Contractor shall furnish all materials, supervision, labor, equipment, and transportation, unless otherwise specified in this Exhibit A to complete the following tasks and deliver the listed products.

LiDAR Data Acquisition	
Project Design Parameters	
AOI Coverage (sq. miles)	547.5
Buffer Distance around AOI	100 m

NPS	.47 m (4 ppm)
Flight line Overlap	30%
Sensor Settings	
Scan Angle	20°
Scan Rate (Hz)	66.3
Repetition Rate (Hz)	246400
Flight Parameters	
Altitude (m/ft)	2338/7671
Air Speed(Kts)	130
Total Number of Lines	96
Total Line Miles	2114
Total Time On Line (Hrs)	16.27
Total Time On Turns (Hrs)	6.4
Total Time (Hrs)	22.67
Capacity	
Missions	8.8
Weather Factor	1.47:1
Days on Site (assuming 1 sensor)	13 days
No. of Sensors planned	1
Total days on site	13 days

Flight Planning

Contractor shall be responsible for applying for, and obtaining, any required permits for access, overflight, or intrusion into, restricted or otherwise limited ground access and/or airspace, which may be included within the requirement of this agreement. The acquisition of 4 ppm LiDAR is planned for March 2017 and is dependent on the execution Phase 2 and weather permitting.

Ground Control

Contractor will be responsible for any and all ground control surveys necessary to produce accurate and acceptable products that meet the standards set forth in the RFP.

LiDAR Specifications

LiDAR Accuracy

The LiDAR data will meet the following accuracy requirements, per USGS Base Specification V1.2.

LiDAR Accuracy Specification	
Relative Vertical Accuracy	
Smooth surface repeatability (cm)	≤ 6
Swath overlap difference, RMSDZ (cm)	≤ 8
Swath overlap difference, maximum (cm)	±16
Absolute Accuracy	
Vertical accuracy RMSEZ (Open ground) (cm)	≤ 10.0

LiDAR Classification Specifications

The LiDAR data will meet the following classification requirements, per RFP.

Typical LAS Classification Options	
Code 1	Processed, but unclassified
Code 2	Bare-earth ground
Code 3	Low Vegetation
Code 4	Medium Vegetation
Code 5	High Vegetation
Code 6	Buildings
Code 7	Low Noise
Code 8	Model Key Point
Code 9	Water
Code 10	Ignored Ground (Breakline Proximity)
Code 17	Bridge Decks
Code 18	High Noise

LiDAR File Formats

- .LAS Format classified point cloud
- Hydro-flattened Bare-earth DEM files in ESRI GRID format
- Hydro Breaklines in Esri .gdb format
- Accuracy Report utilizing LiDAR Check Points
- 2 ft Contours in Esri .gdb format
- 2D Footprints Building from LiDAR Esri .gdb format
- Vegetation Mapping in ESRI .gdb format
- FDGC Compliant Metadata

Collection Window and Conditions

LiDAR shall not be acquired when the ground is obscured by haze, snow, smoke, dust, floodwaters, or environmental factors that may obscure ground detail.

Re-flights

Contractor, at no additional cost to the County, shall re-fly and re-acquire aerial data that does not meet the required specifications.

PRODUCTION SPECIFICATIONS

Projection and Coordinate Systems

All data will be delivered in **California State Plane Zone III North**. The horizontal datum will be **the most current NAD83 Realization, presently NAD83 (CORS96); epoch 2002.0**. All vertical control will be referenced to the **National Geodetic Vertical Datum of 1988** using the most current NGS Geoid Model, presently **GEOID12A**. The unit of measurement will be the **US survey foot**.

Pilot Areas

The County will select four square miles that will tie back to the project tiling index. The Contractor is expected to provide LiDAR deliverables, subject to all the specifications herein as applicable, and gain approval from the County for this work prior to moving forward with the processing of all the final LiDAR products and building and vegetation footprints.

Metadata

Project-level FGDC-compliant metadata in XML format shall be provided. The tiling index shapefile or feature class shall be attributed so that every tile has a name and a collection date and time stamp.

Quality Assurance/Quality Control and Coordination with the Contractor

All data (imagery as well as all associated data products) will be subject to a rigorous review process against defined acceptance criteria. This process will verify the positional accuracy of the data, and ensure its aesthetic and functional quality. The County will conduct this quality control review in accordance with the specifications set out in Acceptance Criteria.

Hydro-flattening

Contractor will produce hydro-flattening to the following parameters as defined in the USGS LiDAR base specification document.

- **Inland ponds and lakes**
 - Water bodies of 8,000 square meters (2 acres) or greater surface area at the time of collection are flattened.
 - Flattened water bodies are represented as flat and level water surface (a single elevation for every bank vertex defining the water body's perimeter).
 - The entire water-surface edge is at or below the immediately surrounding terrain
 - Long impoundments, such as reservoirs, inlets, and fjords, whose water-surface elevations decrease with downstream travel, are compiled as streams or rivers.
- **Inland streams and rivers**
 - Streams and rivers of a 30-m (100-feet) nominal width are flattened.
 - Streams or rivers whose width varies above and below 30 meters will not be broken into multiple segments.
 - Flattened streams and rivers are represented as a flat and level water surface from bank to bank, perpendicular to the apparent flow centerline.
 - Flattened streams and rivers are represented as a gradient downhill water surface, following the immediately surrounding terrain.
 - In cases of sharp turns of rapidly moving water, where the natural water surface is notably not level bank-to-bank, the water surface is represented as it exists while maintaining an aesthetic cartographic appearance.
 - The entire water surface edges are at or below the immediately surrounding terrain.

- Stream channels shall break at culvert locations, leaving the roadway over the culvert intact.
- Bridges in all their forms are removed from the DEM.
- Streams are continuous at bridge locations.
- When the identification of a structure as a bridge or culvert cannot be made definitively, the feature is regarded as a culvert.
- **Non-tidal boundary waters**
 - Boundary waters, regardless of size, are represented only as an edge or edges within the project. Collection does not include the opposite shore.
 - The entire water surface edges are at or below the immediately surrounding terrain.
 - The water surface elevation will be consistent throughout the project.
 - The water surfaces are flat and level, or as appropriate for the type of water body (level for lakes, a gradient for streams and rivers).
 - Any unusual changes in the water surface elevation during the course of the collection (such as increased upstream dam discharge) are documented in the project metadata.
- **Islands**
 - Permanent islands of 4,000 sq m (1 acre) or larger shall be delineated in all water bodies.

Contractor's final processing includes the use of custom routines to validate flow direction and monotonicity to ensure all vector nodes are flowing downhill for single- and double-line streams, or are the same elevation for pools of water, including lakes and ponds.

2-foot Contours

The LiDAR and hydro-flattened DEM will be processed to generate contours.

Contour data will meet the following specifications.

- All index contours will be clearly distinguishable and labeled with their elevations given in full feet.
- Every fifth contour will be an index contour and should be clearly distinguishable as such.
- The elevation of the contour will be easily discernible.
- Contours will be continuous.
- Data will be layered in compliance with the agreed-upon database design, including all symbols, colors, and line-styles.

2D Buildings

Contractor will extract 2D polygons, or building footprints, automatically by the classified LiDAR data's bare earth and building classifications. These 2D polygons are 80-90% geometrically accurate. Each polygon contains an 'area' attribute of the total building size and is stored within an ArcGIS geodatabase. This process is semi-automated, though the user does have the opportunity to further edit the 2D footprints for improved accuracies.

Vegetation Mapping Using LiDAR

As mentioned in the LiDAR classification table, Contractor will classify vegetation in 3 separate classes Low Veg (Code 3); Medium Veg (Code 4) and High Veg (Code 5).

Once the vegetation in the LiDAR data is classified in different classes, classification levels can be used to extract vegetation footprints of the AOI. Contractor can generate 2D and footprints of the areas covered with vegetation for the county to compute:

- Area covered by vegetation

- Volume under the tree canopies

LiDAR Acceptance Criteria

In general terms, this LiDAR Acceptance Criteria review will identify the following:

- Products that do not meet the project's accuracy specifications.
- LiDAR Accuracy as per the USGS LiDAR Base Specification V1.2
- No more than 1% of the LiDAR points are wrongly classified as per the classification scheme defined above
- Building footprints for 95% of the buildings of 100 sq. ft. or more area are extracted
- Vegetation footprints for 95% of the vegetation covering 100 sq. ft. or more area are extracted.

In addition, the Acceptance Criteria review process will examine all other data produced as part of the LiDAR production process. This will include the following:

- Validating correct file formats and versions;
- Reviewing all associated metadata records;
- Reviewing 2D footprints;
- Reviewing all calibration and analytical reports produced by the Contractor.

Conditionally approved or rejected data will be returned to the Contractor for subsequent correction. Within 30 days, the Contractor shall correct all identified errors, review the remaining data for errors, and the report all error corrections made, based on the review.

PROJECT MANAGEMENT REPORTING & CUSTOMER SERVICE

Prior to mobilization of aircraft, the Contractor must prepare draft LiDAR flight documents, which shall be subject to the County review and approval. Throughout the course of the project, the Contractor's Account and Project Management Personnel will ensure timely, accurate and complete reporting of all key events and activities.

Other Program Management functions include (but are not limited to):

- Daily status reports during the acquisition of LiDAR
- Monthly status reports to the County's Project Manager
- Status calls can also be held with the County to coordinate project activities and to review open issues noted in the status report. Exact times will be established with the County during the project initiation meetings.
- Project kick-off and project close-out meetings held via conference call
- Invoices, submitted according to Purchase Order Issued by County.

PROJECT DELIVERABLES

The table below summarizes the list of all the deliverables on the program for Phase 1:

Summary of Deliverables	
Deliverable	Description
Phase 2 Deliverables	
LiDAR flight plan	Final flight plan for LiDAR collection in .PDF and .shp formats.

Metadata	Contractor will provide FGDC compliant metadata for each tile and LiDAR product in .xml format.
Filtered Raw LiDAR Data	Contractor will provide filter (free of noise) raw LiDAR data tiled, in LAS 1.3 format.
Classified Point Cloud	Contractor will provide classified cloud in LAS 1.3 format. Classification schema per the project requirement.
Bare Earth Raster (Raster DEM)	Contractor will provide DEM that is 1 m cell size in 32 bit floating point in ArcGIS GRID format. DEM will be tiled delivery.
Bare Earth Digital Terrain Model (DTM)	Contractor will provide tiled DTM in LAS 1.3 format.
Building Footprint	Building Footprints (2D), Esri ArcGIS 10.2 feature class.
Contours	Contractor will provide tiled contours in ESRI ArcGIS format 10.2 feature class. 2-foot and hydro-flattened surface as per the requirements of the project.
Vegetation footprint	Contractor will provide ESRI feature class format.
Project Documentation	Contractor will provide a copy of all required project documentation including reports regarding aircraft and camera operation, calibration reports, QA/QC reports, and management & administrative documents.

Exhibit B

In consideration of the services provided by Contractor described in Exhibit A and subject to the terms of the Agreement, County shall pay Contractor based on the following fee schedule and terms:

Costs for services are based on a fixed priced.

Contractor shall invoice per milestone completed in coordination with the delivery schedule for Phase 1 below:

- | | |
|---|--------------------------|
| • 10% of Phase 1 upon survey and flight plan approval | \$6,350.10 |
| • 40% of Phase 1 upon imagery acquisition completion | \$25,400.38 |
| • 10% of Phase 1 upon survey report and Aerial Triangulation (AT) report delivery | \$6,350.10 |
| • 30% of Phase 1 upon delivery of Orthos | \$19,050.30 |
| • 10% of Phase 1 upon final acceptance of Orthos | <u>\$6,350.10</u> |

TOTAL FOR PHASE 1: \$63,500.98

Contractor shall invoice per milestone completed in coordination with the delivery schedule for Phase 2 below:

- | | |
|--|---------------------------|
| • 10% of Phase 2 upon survey and LiDAR flight plan approval | \$18,992.93 |
| • 40% of Phase 2 upon LiDAR acquisition completion | \$75,971.72 |
| • 10% of Phase 2 upon survey report and LiDAR Calibration report delivery | \$18,992.93 |
| • 30% of Phase 2 upon delivery of LiDAR products, buildings footprints, Contours | \$56,978.79 |
| • 10% of Phase 2 upon final acceptance | <u>\$18,992.93</u> |

TOTAL FOR PHASE 2: \$189,929.30

Each invoice shall include the following:

- Agreement Number and Purchase Order Number
- Services/milestones completed and amount billed
- Net amount for which payment is due

County shall submit payment within Net thirty (30) days of receipt of invoice.

Attachment IP
Intellectual Property Rights

1. The County of San Mateo ("County"), shall and does own all titles, rights and interests in all Work Products created by Contractor and its subcontractors (collectively "Vendors") for the County under this Agreement. Contractor may not sell, transfer, or permit the use of any Work Products without the express written consent of the County.
2. "Work Products" are defined as all materials, tangible or not, created in whatever medium pursuant to this Agreement, including without limitation publications, promotional or educational materials, reports, manuals, specifications, drawings and sketches, computer programs, software and databases, schematics, marks, logos, graphic designs, notes, matters and combinations thereof, and all forms of intellectual property.
3. Contractor shall not dispute or contest, directly or indirectly, the County's exclusive right and title to the Work Products nor the validity of the intellectual property embodied therein. Contractor hereby assigns, and if later required by the County, shall assign to the County all titles, rights and interests in all Work Products. Contractor shall cooperate and cause subcontractors to cooperate in perfecting County's titles, rights or interests in any Work Product, including prompt execution of documents as presented by the County.
4. To the extent any of the Work Products may be protected by U.S. Copyright laws, Parties agree that the County commissions Vendors to create the copyrightable Work Products, which are intended to be work-made-for-hire for the sole benefit of the County and the copyright of which is vested in the County.
5. In the event that the title, rights, and/or interests in any Work Products are deemed not to be "work-made-for-hire" or not owned by the County, Contractor hereby assigns and shall require all persons performing work pursuant to this Agreement, including its subcontractors, to assign to the County all titles, rights, interests, and/or copyrights in such Work Product. Should such assignment and/or transfer become necessary or if at any time the County requests cooperation of Contractor to perfect the County's titles, rights or interests in any Work Product, Contractor agrees to promptly execute and to obtain execution of any documents (including assignments) required to perfect the titles, rights, and interests of the County in the Work Products with no additional charges to the County beyond that identified in this Agreement or subsequent change orders. The County, however, shall pay all filing fees required for the assignment, transfer, recording, and/or application.
6. Contractor agrees that before commencement of any subcontract work it will incorporate this **ATTACHMENT IP** to contractually bind or otherwise oblige its subcontractors and personnel performing work under this Agreement such that the County's titles, rights, and interests in Work Products are preserved and protected as intended herein.