

SERVICES AGREEMENT

This Services Agreement (hereinafter referred to as "Agreement"), entered into by and between the **Consolidated City of Indianapolis and Marion County Information Services Agency** (hereinafter referred to as "City/County") and **Kucera International, Inc.** (hereinafter referred to as "Contractor"), is executed pursuant to the terms and conditions set forth herein. In consideration of those mutual undertakings and covenants, the parties agree as follows:

SECTION I. INTERPRETATION AND INTENT

- 1.01 The "Agreement", as referred to herein, shall mean this Agreement executed by City/County and Contractor, and shall include these Terms and Conditions, the Attachments described in Sections II and IV and attached hereto, all addenda issued prior to receipt of RFPs, quotes, or bids, whether or not receipt thereof has been acknowledged by Contractor, all conditions, plans, specifications and standards, instructions and notice to vendors, and any written supplemental agreement or modification entered into between City/County and Contractor, in writing, after the date of this Agreement.
- 1.02 This Agreement constitutes the entire agreement between the parties and supersedes all prior agreements, written or verbal, between City/County and Contractor. No statements, promises or agreements whatsoever, in writing or verbal, in conflict with the terms of the Agreement have been made by City/County or Contractor which in any way modify, vary, alter, enlarge or invalidate any of the provisions and obligations herein stated. This Agreement may be amended and modified only in writing signed by both City/County and Contractor.
- 1.03 In resolving conflicts, errors, discrepancies and disputes concerning the scope of the work or services to be performed by Contractor or other rights or obligations of City/County or Contractor the document or provision thereof expressing the greater quantity, quality or scope of service or imposing the greater obligation upon Contractor and affording the greater right or remedy to City/County, shall govern.
- 1.04 Any interpretation applied to this Agreement, by the parties hereto, by an arbitrator, court of law, or by any other third party, shall not be made against City/County solely by virtue of City/County or City/County's representatives having drafted all or any portion of this Agreement.
- 1.05 This Agreement shall include, and incorporate by reference, any provision, covenant or condition required or provided by law or by regulation of any state or federal regulatory or funding agency.

SECTION II. DUTIES OF CONTRACTOR

- 2.01 Contractor shall provide services as specified in **Attachment A**, Scope of Work, attached hereto and incorporated into this Agreement.

SECTION III. TERM

- 3.01 The term of this Agreement shall begin upon execution date of this Agreement by all parties and shall terminate on **December 31, 2018** unless terminated earlier in accordance with this Agreement.
- 3.02 This Agreement may be renewed by agreement of parties. The term of the renewal may be less but shall not be longer than the term of the original Agreement. A renewal shall be only by written instrument signed by both City/County and Contractor and attached hereto as an amendment. All other terms and conditions of the Agreement shall remain the same as set forth herein.

SECTION IV. COMPENSATION

- 4.01 Contractor proposes to furnish all labor, materials and supplies in accordance with the conditions of this Agreement necessary to complete the work as defined in Attachment A at the rates set forth in Attachment B, attached hereto and incorporated into this Agreement. However, in no event shall compensation for services under this Agreement exceed **Two Hundred Seventeen Thousand Nine Hundred Dollars (\$217,900.00)**.
- 4.02 Contractor shall submit a properly itemized invoice for services performed and expenses incurred under this Agreement and shall cooperate with and provide any other necessary information to City/County. City/County will pay Contractor within thirty (30) days after receipt of such properly itemized claim forms.

SECTION V. GENERAL PROVISIONS

- 5.01 Independent Contractor. The parties agree that Contractor is an independent contractor as that term is commonly used and is not an employee of the Consolidated City of Indianapolis and/or Marion County. As such, Contractor is solely responsible for all taxes and none shall be withheld from the sums paid to Contractor. Contractor acknowledges that it is not insured in any manner by City/County for any loss of any kind whatsoever. Contractor has no authority, express or implied, to bind or obligate City/County in any way.
- 5.02 Subcontracting.
- 5.02.1 Approval required - The parties agree that Contractor shall not subcontract, assign or delegate any portion of this Agreement or the services to be performed hereunder without prior written approval of City/County. In the event that City/County approves of any such subcontracting, assignment or delegation, Contractor shall remain solely responsible for managing, directing and paying the person or persons to whom such responsibilities or obligations are sublet, assigned or delegated. City/County shall have no obligation whatsoever toward such persons. Contractor shall take sole responsibility for the quality and quantity of any services rendered by such persons. Any consent given in accordance with this provision shall not be construed to relieve Contractor of any responsibility for performing under this Agreement.
- 5.02.2 Minority, Women, Veterans, and Disability-Owned Business Enterprise Participation - To the extent Contractor uses subcontractors or other agents in the performance of services under this Agreement, Contractor shall either:

Use, at a minimum, fifteen percent (15%) Minority Business Enterprises, eight percent (8%) Women's Business Enterprises, three percent (3%) Veteran's Business Enterprises, and one percent (1%) Disability-Owned Business Enterprises in the performance of services under this Agreement; or

Demonstrate a good faith effort to achieve such percentages, in compliance with the policies and to the satisfaction of the City of Indianapolis Department of Minority & Women Business Development.

Violation of this Subsection shall constitute a breach of this Agreement.

5.03 Necessary Documentation. Contractor certifies that it will furnish City/County, if requested, any and all documentation, certification, authorization, license, permit, or registration required by the laws or rules and regulations of the City of Indianapolis, the County of Marion, other units of local government, the State of Indiana, and the United States. Contractor further certifies that it is now and will remain in good standing with such governmental agencies and that it is now and will maintain its license, permit, registration, authorization, or certification, as applicable, in force during the term of this Agreement. Failure of Contractor to comply with this paragraph shall constitute a material breach of this Agreement.

5.04 Confidentiality.

5.04.1 The obligations of this section shall survive the termination of this Agreement and shall be applicable to the full extent permissible under statutes governing access to public records. Contractor understands that the information provided to it or obtained from City/County during the performance of its services is confidential and may not, without prior written consent of City/County, be disclosed to a person not in City/County's employ except to employees or agents of Contractor who have a need to know in order to provide the services. Further, Contractor's work product generated during the performance of this Agreement is confidential to City/County. The failure to comply in all material respects with this section shall be considered a material breach of this Agreement. Confidential information shall not include information, that: (a) was known by Contractor at the time it was received; (b) is, as of the time of its disclosure or thereafter becomes, part of the public domain through a source other than Contractor; (c) is made known to Contractor by a third person who does not impose any obligation of confidence on Contractor with respect to such information; (d) is required to be disclosed pursuant to governmental authority, law, regulation, duly authorized subpoena or court order whereupon Contractor shall provide notice to City/County prior to such disclosure; or (e) information that is independently developed by Contractor without references to the confidential information.

5.04.2 Contractor shall not, under any circumstances, release information provided to it by, or on behalf of, City/County that is required to be kept confidential by City/County pursuant to Indiana law except as contemplated by Section 5.04.1(d), above.

5.04.3 Contractor acknowledges that City/County will not treat this Agreement as confidential information and will post the Agreement on the City of Indianapolis website as required by Section 141-105 of the Revised Code of the Consolidated

City of Indianapolis and Marion County. Use by the public of any document or the information contained therein shall not be considered an act of City/County.

5.05 Records; Audit. Contractor shall maintain books, records, documents and other evidence directly pertinent to performance of services under this Agreement. Contractor shall make such materials available at its offices at all reasonable times during the Agreement period and for three (3) years from the date of final payment under this Agreement for inspection by City/County or any other authorized representative of the City of Indianapolis, Marion County, Indiana. Copies thereof, if requested, shall be furnished at no cost to City/County.

5.06 Ownership.

5.06.1 "Works" means works of authorship fixed in any tangible medium of expression by Contractor or its officers, employees, agents or subcontractors in the course of performing the services under this Agreement, including, but not limited to, computer programs, electronic art, computer generated art, notes, specifications, drawings, flow charts, memoranda, correspondence, records, notebooks, documentation, reports and charts, regardless of the medium in which they are fixed, and all copies thereof.

5.06.2 All Works made or created by Contractor, either solely or jointly with City/County, in the course of Contractor's performance of services under this Agreement shall be deemed to be works for hire and are and shall be the exclusive property of City/County. At City/County's request, Contractor will execute all documents reasonably required to confirm or perfect ownership of such Works and any corresponding copyright rights in and to such Works in City/County. Without the prior written consent of City/County, Contractor shall not use, copy or prepare derivative works of the Works, or any parts of them, other than as related to the performance of this Agreement. During the performance of this Agreement, Contractor shall be responsible for loss or damage to the Works while they are in Contractor's possession or control. Any loss or damage shall be restored at Contractor's expense. City/County shall have free and unlimited access to the Works at all times and, upon demand, shall have the right to claim and take possession of the Works and all copies. Notwithstanding the foregoing, Contractor shall be entitled to retain a set of its work papers for archival purposes only, in accordance with applicable professional standards.

5.06.3 Contractor shall retain all rights in and to its know-how, methods, techniques, discoveries, concepts, and ideas, whether patentable or not, and whether possessed by Contractor prior to or acquired by Contractor during the performance of this Agreement. Contractor also shall retain all rights in and to all works of authorship fixed in a tangible medium of expression which were made, created or acquired by Contractor prior to the effective date of this Agreement ("Pre-Existing Works"), provided that a listing of such Pre-Existing Works is attached to this Agreement.

5.07 Insurance. Contractor shall, as a condition precedent to this Agreement, purchase and thereafter maintain such insurance as will protect it and City/County from the claims set forth below which may arise out of or result from Contractor's operations under this Agreement, whether such operations be by Contractor or by its subcontractors or by

anyone directly or indirectly employed by any of them, or by anyone directly for whose acts any of them may be liable:

- 1) Claims under Worker's Compensation and Occupational Disease Acts, and any other employee benefits acts applicable to the performance of the work;
- 2) Claims for damages because of bodily injury and personal injury, including death, and;
- 3) Claims for damages to property.

Contractor's insurance shall be not less than the amounts shown below:

A. Commercial General Liability (Occurrence Basis)

Bodily Injury, personal injury, property damage, Contractual liability, product/completed operations

Each Occurrence Limit	\$1,000,000.00
Damage to Rented Premises	\$100,000.00 (each occurrence)
Medical Expense Limit	\$5,000.00
Personal and Advertising Injury Limit	\$500,000.00
General Aggregate Limit	\$2,000,000.00 (Other than Products Completed Operations)

NOTE: GENERAL AGGREGATE TO APPLY PER PROJECT

Products/Completed Operations	\$1,000,000.00
B. Auto Liability	\$1,000,000.00 (combined single limit) (owned, hired & non-owned)
Bodily injury & property damage	1,000,000.00 each accident
C. Excess/Umbrella Liability	\$1,000,000 (each occurrence and aggregate)
D. Worker's Compensation	Statutory
E. Employer's Liability	
Bodily Injury Accident	\$100,000 each accident
Bodily Injury by Disease	\$100,000 each employee
Bodily Injury by Disease	\$500,000 policy limit
F. [Reserved for Professional Liability or additional riders as needed]	

- 5.07.1 Certificates of Insurance, naming the City/County as an "additional insured," (A, B, and C, only) showing such coverage then in force (but not less than the amount shown above) shall be filed with City/County prior to commencement of any work. These certificates shall contain a provision that the policies and the coverage afforded will not be canceled until at least thirty (30) days after written notice has been given to City/County.
- 5.07.2 With the prior approval of City/County, Contractor may substitute different types of coverage for those specified as long as the total amount of required protection is not reduced. Contractor shall be responsible for all deductibles.
- 5.07.3 Nothing in the above provisions shall operate as or be construed as limiting the amount of liability of Contractor to the above enumerated amounts.

5.08 Termination for Cause or Convenience.

- 5.08.1 If Contractor becomes insolvent, or if it refuses or fails to perform the work and services provided by this Agreement, or if it refuses to perform disputed work or services as directed pending resolution of such dispute, or if it fails to make payments to subcontractors employed by it, or if it otherwise violates or fails to perform any term, covenant or provision of this Agreement, then City/County may, without prejudice to any other right or remedy, terminate this Agreement in whole or in part, in writing, provided that Contractor shall be given (1) not less than ten (10) calendar days written notice of City/County's intent to terminate, and (2) an opportunity for consultation with City/County prior to termination. In determining the amount of final payment to be made to Contractor upon such termination for default, if any, no amount shall be allowed for anticipated profit on unperformed services or other work; furthermore, an adjustment shall be made to the extent of any additional costs incurred or reasonably foreseen by City/County to be incurred by reason of Contractor's default.
- 5.08.2 This Agreement may be terminated in whole or in part in writing by City/County for City/County's convenience; provided that Contractor is given (1) not less than ten (10) calendar days written notice of intent to terminate and (2) an opportunity for consultation with City/County prior to termination. If City/County terminates for convenience, Contractor's compensation shall be equitably adjusted.
- 5.08.3 Upon receipt of notice of termination for default or for City/County's convenience, Contractor shall (1) promptly discontinue all services affected, unless the termination notice directs otherwise, and (2) deliver or otherwise make available to City/County all Works and such other information, materials or documents as may have been accumulated by Contractor in performing this Agreement, whether completed or in process.
- 5.08.4 If, after termination for Contractor's default, it is determined that Contractor was not in default, the termination shall be deemed to have been made for the convenience of City/County. In such event, adjustment of the price provided for in this Agreement shall be made as provided in Section 5.08.2 and the recovery of such price adjustment shall be Contractor's sole remedy and recovery.

5.09 Termination for Failure of Funding. Notwithstanding any other provision of this Agreement, if funds for the continued fulfillment of this Agreement by City/County are at any time insufficient or not forthcoming through failure of any entity to appropriate funds or otherwise, then City/County shall have the right to terminate this Agreement without penalty by giving written notice documenting the lack of funding, in which instance this Agreement shall terminate and become null and void on the last day of the fiscal period for which appropriations were received. City/County agrees that it will make its best efforts to obtain sufficient funds, including but not limited to, requesting in its budget for each fiscal period during the term hereof sufficient funds to meet its obligations hereunder in full.

5.10 Indemnification. Contractor agrees to indemnify, defend, and hold harmless the City of Indianapolis, Marion County and their respective officers, agents, officials and employees for any and all third party claims, actions, causes of action, judgments and liens to the extent they arise out of any negligent or wrongful act or omission or breach of any provision of this Agreement by Contractor or any of its officers, agents, employees or subcontractors regardless of whether or not it is caused in part by the negligence of a party indemnified hereunder.

Such indemnity shall include attorney's fees and all costs and other expenses arising therefrom or incurred in connection therewith and shall not be limited by reason of the enumeration of any insurance coverage required herein. City/County shall not provide such indemnification to Contractor, provided, however, that Contractor shall be relieved of its indemnification obligation to the extent any injury, damage, death or loss is attributable to the acts or omissions of City/County.

5.11 Notice. Any notice required to be sent under this Agreement shall be sent by internationally recognized overnight courier, certified mail, facsimile or other delivery method which provides confirmation of receipt and shall be directed to the persons and addresses specified below (or such other persons and/or addresses as any party may indicate by giving notice to the other party) :

To Contractor:

Attn: Joe Moore
14390 Clay Terrace Dr, Ste 204
Carmel, IN 46032
Joseph.moore@perficient.com

To City/County:

Attn: Chief Information Officer
City of Indianapolis/Marion County
Information Services Agency
200 East Washington Street
Indianapolis, IN 46204

5.12 Disputes. Contractor shall carry on all work required under this Agreement and maintain the schedule for services during all disputes or disagreements with City/County. No work shall be delayed or postponed pending resolution of any disputes or disagreements except as Contractor and City/County may otherwise agree in writing. Should Contractor fail to continue to perform its responsibilities as regards all non-disputed work without delay, any additional costs incurred by City/County or Contractor as a result of such failure to proceed shall be borne by Contractor, and Contractor shall make no claim against the City/County for such costs. City/County may withhold payments on disputed items pending resolution of the dispute.

5.13 Non-discrimination. Contractor and its officers, agents, employees, and subcontractors shall not discriminate against any employee or applicant for employment to be employed in the performance of this Agreement, with respect to her or his hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment, because of her or his race, sex, sexual orientation, gender identity, religion, color, national origin, ancestry, age, disability, or United States military service veteran status. Breach of this section shall be regarded as a material breach of this Agreement.

5.14 Conflict of Interest.

5.14.1 Contractor certifies and warrants to City/County that neither it nor any of its officers, agents, employees, or subcontractors who will participate in the performance of any services required by this Agreement has or will have any conflict of interest, direct or indirect, with City/County.

5.14.2 For purposes of compliance with IC 36-1-21, Contractor certifies and warrants to City/County that Contractor, or a person who wholly or partially owns Contractor, is not a *relative*, as that term is defined by IC 36-1-21-3, of either the Mayor of Indianapolis, Indiana, or a member of the City-County Council of Indianapolis and Marion County, Indiana.

5.15 Non-contingent Fees. Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees. For breach or violation of this warranty City/County shall have the right to annul this Agreement without liability or in its discretion to deduct from the Agreement price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

5.16 Force Majeure. In the event that either party is unable to perform any of its obligations under this Agreement – or to enjoy any of its benefits – because of fire, explosion, power blackout, natural disaster, strike, embargo, labor disputes, war, terrorism, acts of God, acts or decrees of governmental bodies or other causes beyond such party's reasonable control (hereinafter referred to as Force Majeure Event), the party who has been so affected shall immediately give notice to the other and shall take commercially reasonable actions to resume performance. Upon receipt of such notice, all obligations under this Agreement shall immediately be suspended except for payment obligations with respect to service already provided. If the period of nonperformance exceeds sixty (60) days from the receipt of the Force Majeure Event, the party whose ability to perform has not been so affected may, by giving written notice, terminate this Agreement.

5.17 Applicable Laws; Forum.

5.17.1 Contractor agrees to comply with all applicable federal, state and local laws, rules, regulations or ordinances, and all provisions required thereby to be included in this Agreement are hereby incorporated by reference. This includes, but is not limited to, the Federal Civil Rights Act of 1964 and, if applicable, the Drug-Free Workplace Act of 1988. The enactment of any state or federal statute or the promulgation of regulations thereunder after execution of this Agreement

shall be reviewed by City/County and Contractor to determine whether the provisions of the Agreement require formal modification.

- 5.17.2 This Agreement shall be construed in accordance with the laws of the State of Indiana, and by all applicable Municipal Ordinance or Codes of the Consolidated City of Indianapolis, County of Marion. Suit, if any, shall be brought in the State of Indiana, County of Marion.
- 5.18 Waiver. City/County's delay or inaction in pursuing its remedies set forth in this Agreement, or available by law, shall not operate as a waiver of any of City/County's rights or remedies.
- 5.19 Severability. If any provision of this Agreement is held to be invalid, illegal, or unenforceable by a court of competent jurisdiction, the provision shall be stricken, and all other provisions of this Agreement which can operate independently of such stricken provisions shall continue in full force and effect.
- 5.20 Attorneys' Fees. Contractor shall be liable to City/County for reasonable attorneys' fees incurred by City/County in connection with the collection or attempt to collect, any damages arising from the negligent or wrongful act or omission of Contractor, or from Contractor's failure to fulfill any provisions or responsibility provided herein.
- 5.21 Successors and Assigns. City/County and Contractor each binds itself and its partners, successors, executors, administrators and assigns to the other party of this Agreement and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement; except as otherwise provided herein, Contractor shall not assign, sublet or transfer its interest in this Agreement without the written consent of City/County. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of City/County.
- 5.22 Authority to Bind Contractor. Notwithstanding anything in this Agreement to the contrary, the signatory for Contractor represents that he/she has been duly authorized to execute agreements on behalf of Contractor and has obtained all necessary or applicable approval from the home office of Contractor to make this Agreement fully binding upon Contractor when his/her signature is affixed and accepted by City/County.
- 5.23 Debarment and Suspension
- 5.23.1 Contractor certifies, by entering into this Agreement, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from or ineligible for participation in any Federal assistance program by any Federal department or agency, or by any department, agency or political subdivision of the State of Indiana. The term "principal" for purposes of this Agreement means an officer, director, owner, partner, key employee, or other person with primary management or supervisory responsibilities, or a person who has a critical influence on or substantive control over the operations of Contractor.
- 5.23.2 Contractor certifies, by entering into this Agreement, that it does not engage in investment activities in Iran as more particularly described in IC 5-22-16.5.

5.23.3 Contractor shall provide immediate written notice to City/County if, at any time after entering into this Agreement, Contractor learns that its certifications were erroneous when submitted, or Contractor is debarred, suspended, proposed for debarment, declared ineligible, has been included on a list or received notice of intent to include on a list created pursuant to IC 5-22-16.5, voluntarily excluded from or becomes ineligible for participation in any Federal assistance program. Any such event shall be cause for termination of this Agreement as provided herein.

5.23.4 Contractor shall not subcontract with any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in any Federal assistance programs by any Federal department or agency, or by any department, agency or political subdivision of the State of Indiana.

5.24 Compliance With E-Verify Program. Pursuant to IC 22-5-1.7, Contractor shall enroll in and verify the work eligibility status of all newly hired employees of Contractor through the E-Verify Program ("Program"). Contractor is not required to verify the work eligibility status of all newly hired employees through the Program if the Program no longer exists.

5.24.1 Contractor and its subcontractors shall not knowingly employ or contract with an unauthorized alien or retain an employee or contract with a person that Contractor or its subcontractor subsequently learns is an unauthorized alien. If Contractor violates this Section 5.24, City/County shall require Contractor to remedy the violation not later than thirty (30) days after City/County notifies Contractor. If Contractor fails to remedy the violation within the thirty (30) day period, City/County shall terminate the contract for breach of contract. If City/County terminates the contract, Contractor shall, in addition to any other contractual remedies, be liable to City/County for actual damages. There is a rebuttable presumption that Contractor did not knowingly employ an unauthorized alien if Contractor verified the work eligibility status of the employee through the Program.

5.24.2 If Contractor employs or contracts with an unauthorized alien but City/County determines that terminating the contract would be detrimental to the public interest or public property, City/County may allow the contract to remain in effect until City/County procures a new contractor.

5.24.3 Contractor shall, prior to performing any work, require each subcontractor to certify to Contractor that the subcontractor does not knowingly employ or contract with an unauthorized alien and has enrolled in the Program. Contractor shall maintain on file a certification from each subcontractor throughout the duration of the Project. If Contractor determines that a subcontractor is in violation of this Section 5.24, Contractor may terminate its contract with the subcontractor for such violation.

5.24.4 Pursuant to IC 22-5-1.7 a fully executed affidavit affirming that the business entity does not knowingly employ an unauthorized alien and confirming Contractors enrollment in the Program, unless the Program no longer exists, shall be filed with City/County prior to the execution of this Agreement. This Agreement shall not be deemed fully executed until such affidavit is filed with the City/County.

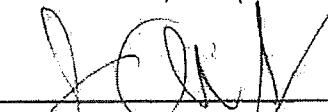
5.25 Key Persons. The parties agree that the work described in this Agreement to be performed by Contractor is a personal service, highly professional in nature, and that the identity of the individual who is to be personally responsible for such work is of prime importance to City/County. The parties therefore agree that in the event of the death or disability of Contractor, or, if Contractor is a firm, partnership, or corporation, in the event of the death, or disability or termination of employment of anyone understood to be personally responsible for the work described in this Agreement, City/County may, without penalty and in its discretion, terminate this Agreement, and make its own new Agreement with any other party for completion of the work herein described.

5.26 Electronic Signature. Contractor and City-County agree to signature both in counterparts and by facsimile.

[Signatures To Follow]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the dates subscribed below.

Kucera International, Inc. ("Contractor")

By: 
Printed: John Antalovich, Jr.
Title: President

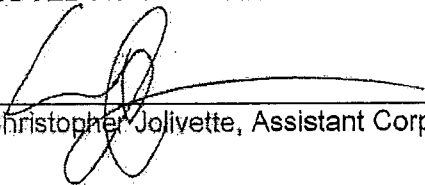
Date: 12/22/15

CONSOLIDATED CITY OF INDIANAPOLIS/MARION COUNTY, INFORMATION SERVICES AGENCY ("City/County")

By: 
Beth Howen, Chief Information Officer


Date: 1/4/16

APPROVED AS TO FORM AND LEGALITY:

By: 
Christopher Jolivet, Assistant Corporation Counsel

Date: December 18, 2015

APPROVED AS TO AVAILABILITY OF FUNDING:

OK
By: 
Matthew Kimmick, Controller

Date: 01-15-16

Attachment A

Scope of Work

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

PROJECT OVERVIEW

Statement of Work

The primary services which Kucera International Inc. will provide to the Indianapolis and Marion County, Indiana Information Services Agency (ISA) for this contract will be new (Spring 2014 leaf off) aerial lidar surveying and return classification, ground control/checkpoint surveying, digital terrain model (DTM) breakline compilation/production, hydro-flattened DEM, and digital contour/topographic mapping covering Marion County, Indiana and a designated one mile buffer/collar area, with a total project area of approximately 490 square miles.

The aerial lidar survey will be performed to meet USGS QL2 standards and have a return resolution within 2'. The contour/topographic mapping will be produced at a 1' interval. Metadata in FGDC-compliant project level form will be provided for the lidar and mapping deliverables.

Project Standards and Accuracies:

All project work will be performed in accordance with the ISA GIS Orthoimage/Photogrammetric Services RFQ-51ISA-15-02 Scope of Work and cited USGS and FEMA standards as applicable. The absolute accuracies achieved within the various datasets for representation of positions and elevations of well-defined, ground-based features in relation to their "true" (accurately surveyed) values will be as follows:

<u>Data Product</u>	<u>Accuracy</u>
Lidar bare earth return products And hydro DEM	Vertical RMSE within 10cm NVA within 19.6 cm at 95% confidence VVA within 29.4 cm at 95% confidence
Contour topography	within ½ contour interval vertical at 90% confidence

Conformance with the accuracy requirements will be confirmed through comparison of coordinates or elevations for ground surveyed "blind" (not used in dataset georeferencing) checkpoints against their dataset derived values. The results of the accuracy testing will be included in the relevant project reports and metadata. The datasets will not be considered acceptable until meeting the project accuracy standards and will be revised/reproduced by Kucera as needed to meet the standards at no added cost to ISA.

Project Datums and Units:

The datums used for capture/measurement and delivery of the datasets will be the NAVD83 Indiana State Plane coordinate system horizontal and NAVD88 vertical. The survey/measurement units will be US survey feet. The horizontal adjustment (e.g. 2011 HARN) and vertical geoid (e.g., 2012A) will be the most current or as otherwise selected by the ISA to match that of the City/County's existing GIS datasets.

Place of Performance

All work for this contract with the exception of the ground surveying will be conducted in-house from/at Kucera International's corporate headquarters facility and hangar at Lost Nation Airport in Willoughby, Ohio. Kucera's headquarters facility's normal operating hours are 8 a.m. to 12 a.m. (two shifts) on weekdays and from 8 a.m. to 12 p.m. on Saturdays, excluding normal business holidays. The facility is open for visitation/inspection any time during these hours or at other hours by prearrangement.

Serving as a subconsultant to Kucera for the project ground surveying work will be Meeks & Company Professional Surveyors of Indianapolis, Indiana, an Indiana-certified VBE.



Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

Resource Commitment

Project Staff:

- Three (3) overall project/production/QC management - > 280 hours/month
- Two (2) 2-man ground survey crews > 300 crew hours/month
- Two (2) aerial flight crews (pilot and sensor operator) - > 200 crew hours/month
- Two (2) AGPS/IMU technicians - > 200 hours/month
- Three (3) lidar processing technicians - > 400 hours/month
- Four (4) stereocompilers - > 600 hours/month
- Three (3) CAD/GIS technicians - > 400 hours/month
- One (1) metadata technician - > 160 hours/month

Project Equipment:

- One (1) twin-engine Piper Navajo Chieftain aircraft w/dual sensor ports
- One (1) Leica ALS70 500 kHz aerial lidar system with MPiA
- Two (2) TerraPOS airborne GPS/IMU systems
- One (1) TerraSolid and GeoCue lidar processing station
- Two (2) BAE Socet Set softcopy stereoplotters
- Two (2) Cardinal Systems VR1 mapping edit/review stations
- Two (2) GIS conversion/review stations running ArcGIS, Global Mapper AutoCAD

1. PROJECT INITIATION

1.1 Project Kickoff and Work Plan:

A "kickoff" meeting/conference with ISA will be used to establish lines of communication, review the scope of work, and address any outstanding questions/issues related to the project.

A project work plan will be prepared which will include a summary of project procedures and deliverables, project completion schedule and milestones, communication/reporting process, flight and control network diagrams, master tile/grid, GIS data model, and quality control plan/acceptance criteria for the project as needed.

1.2 Tile Grid:

The lidar return and contour mapping will be delivered in the designated/specified PLS section-based or modular coordinate grid defined tile grid. Kucera will review the projectwide tile grids with ISA and make adjustments for coverage as needed, with the project flight and control plans being likewise adjusted to ensure fully controlled aerial photo coverage is acquired for all tiles, including full tiles at the project periphery.

1.3 Flight/Control Plans:

Kucera will prepare and submit for ISA's approval a projectwide flight line and ground control plan based on the designated project area and tile scheme. The plan will show the project boundaries and tile grid to verify coverage of all tiles with lidar return. An ArcGIS geodatabase or shapefile file of the finalized flight/control plan will be furnished.

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

1.4 GIS Data Model:

Kucera will review the ISA's existing GIS data model/database design for the DTM/contour feature mapping. A GIS conversion process based on the data model/layer scheme will be developed for the designated project area mapping and tested/verified in the pilot project.

1.5 Quality Control Plan:

A project QC plan will be prepared which will address the following:

- Quality control checklists and acceptance criteria (quantitative and/or qualitative) for each project phase.
- Procedures supporting internal reporting and resolution of QC issues.
- Test/calibration of project equipment to ensure proper working order and operating characteristics within designated tolerances before use on project.
- Review of project specifications and standards by all project management team members.
- Pilot project for review and approval/selection of sample final project deliverables.
- Report deliverable for each project phase documenting procedures used and results achieved.
- Review of all project source data and prompt reporting of anomalies/deficiencies found.
- Full manual review of all project data deliverables before transmittal.
- Procedures/technologies for support of and response to the external quality control review process and for prompt addressing of quality control issues, including documentation of nature of issue, cause, and method of resolution.

1.6 Communication Plan:

Kucera will have a Communication Plan documenting reporting and response procedures and Kucera points of contact. Kucera's Project Manager will provide written status reports to the ISA on at least a semi-monthly basis throughout the contract duration. Status reports/communication will also be made promptly if any significant data delivery and/or quality issues are encountered or when information is needed from the ISA. Kucera's management team members will serve as secondary points of contact in the Project Manager's absence or for technical data exchange as needed. All ISA inquiries will be responded to promptly and within 24 hours of receipt.

1.7 Project Source Data:

In the project initiation phase Kucera will acquire, review and organize/document any available source data. For source data furnished by the ISA, Kucera will request clarifications as needed and will report any possible anomalies and missing data for review and resolution.

The project source data may include:

- Project area boundaries and tile grids – furnished by ISA
- Existing ground control monument records/reports – as available from the ISA, State, and/or US NGS



Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

2. GROUND CONTROL AND CHECKPOINT SURVEY

2.1 Overview/Ground Control Plan:

The ground points used for georeferencing and accuracy testing of the lidar ground return, hydro DEM, and DTM-based contour mapping will consist of 20 control/georeferencing points spread through the project area, 20 accuracy checkpoints spread through non-vegetated areas (i.e., NVA checkpoints), and 20 points spread through significant areas of vegetative coverage (i.e., VVA checkpoints).

Survey Subconsultant:

Kucera's survey subconsultant is:

Meeks & Company
7730 N St. Hwy 7
Scipio, IN 47273
Eric Meeks, IN PLS,
Phone: (812) 592-4145
eric.meeks@meekscompany.com

Meeks & Company will report to Kucera's management team and will carry a letter of authorization from Kucera or the ISA.

2.2 Control and Checkpoint Type:

The control points will be newly surveyed xyz points located on available hard, flat surfaces and/or recovered existing County control monuments having suitable locations, datums, and accuracy. The control points used will be shared locations with control used by ISA's aerial photo imagery vendor to the extent needed to ensure georeferencing consistency.

Accuracy checkpoints for non-vegetated areas (i.e., NVA points) will be distributed between and surveyed in bare earth, low grass, paved and urbanized areas. Accuracy checkpoints for vegetated areas (i.e., VVA points) will be distributed between tall grass/weeds/crop, brush land, and forested areas to the extent of coverage with the overall project area.

2.3 Point Marking/Referencing:

Newly established control and checkpoint locations will be field-marked (e.g., with pk nails) as needed for recovery. Ground control field photographs of the point locations will be taken for reference and recovery.

2.4 Survey Technology/Receiver Calibration:

All new ground control coordinates and elevations will be surveyed using survey-grade, dual-frequency Trimble 5800 and TOPCON GRS1 GNSS/VRS-compatible GPS receivers. The receivers will be calibrated and checked on site if possible by observing vectors between available high order control stations.

2.5 Survey Observation and Reduction Procedures:

All new control and checkpoints will be GPS surveyed to within 4cm/0.13' horizontal and vertical accuracy using static or kinematic/VRS observation. For static surveying the observation time will be at least 30 minutes. Where kinematic/VRS 1-2 minute GPS occupation surveying is used, a sampling of points will also be surveyed in static fashion and the VRS-derived elevations checked against static to ensure sufficient

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

accuracy of the VRS surveying. Existing high order accuracy control monuments will also be included in the observation network as needed to provide assurance of suitable accuracy and consistency.

The processing of the GPS observations be performed using Novatel/Waypoint GrafNet network adjustment software, with output of point coordinates, elevation, and accuracy residuals. The observation data is also submitted to the NGS OPUS network adjustment service as a check of computed coordinates and elevations.

2.6 Control Report:

At the completion of the ground survey work Kucera will provide a ground survey report that will include a summary of the survey procedures and technologies used, final control listings, new control description sheets, existing control recovery sheets, GPS observation and reduction data, network diagram, and other relevant survey documentation as required. An attached shapefile of control points will be included with the survey report.

3. AERIAL LIDAR SURVEY AND RETURN CLASSIFICATION

3.1 Overview/Flight Conditions

The aerial lidar survey will be performed in the winter-spring 2016 before emergence of vegetation and with the following conditions observed:

- No precipitation and clouds above flying height
- No significant snow cover, smoke, fog, flooding
- Cross-winds within approximately 30 knots, crab angle within 11 degrees
- Head and tail winds within 40 knots to maintain return distribution consistency/homogeneity

3.2 Lidar Technology and Calibration

The aerial lidar data capture will be accomplished with Kucera's 500 kHz Leica ALS70 aerial lidar technology. A boresight calibration flight will be accomplished at Kucera's main calibration site at Lost Nation Airport in Willoughby, Ohio. "In-situ" boresighting will be performed directly on the captured return for the project. The project control will be referenced in the system/collection adjustment process to provide an initial significant check of the return data to the control.

3.3 Flight Plan/Operational Settings

The flight and lidar system operational settings for the projectwide lidar flyover will be as follows:

- Flight altitude (AGL): 6200'
- Aircraft speed: 155 knots
- Scan FOV: 36°
- Scan rate: 56 Hz
- Pulse rate: 287.6 kHz
- Sidelap/flight line spacing: 20% / 3200'
- Swath width: 4050'
- Nominal point spacing (NPS): 1.9' (approximately 3ppsm)
- Returns/pulse: 4, w/last return

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

The parameters/settings will yield a lidar return at a density and accuracy meeting USGS QL2 requirements and supporting lidargrammetry procedures for 1' contour grade DTM breakline compilation. On-line time and associated flight line length will be limited to within 20 minutes/ 50 - 60 miles to best eliminate potential for AGPS/IMU system "drift" inaccuracies from loss of reference. Data return voids will be limited to water bodies and other surfaces with very low NIR reflectivity/black surfaces (e.g., new asphalt, new tarred roofing).

All GPS/INS data will be post-processed using both DGPS (tightly coupled) and PPP (precise point positioning), to provide a check on proper satellite lock, tightly coupled circuitry, and datum mismatches in the base stations. The two results will be combined as needed to produce the most accurate and consistent trajectory file.

During the flight flyover, the lidar operator will closely monitor the lidar system for proper operation of the laser scanner, return density, proper GPS signal lock, and acceptable PDOP. The lidar flight management system will display a continuous "heads-up" real time feedback to the operator of actual lidar coverage on the ground, to ensure both the operational settings and swath coverage are correct. The FCMS flight management system will also record on-the-fly the portions of the project area which have been flown. Successfully flown lines are automatically removed from the flight plan once completed and checked.

Directly following each day's flying, the flight management system database will be electronically transferred to Kucera's headquarters office for processing and review. The database includes airborne GPS/IMU recordings, which are initially processed to generate trace/route logs indicating flight coverage. System performance/recording output is evaluated along with coverage. Areas having data gaps or uncorrectable anomalies are flagged for reflight.

The lidar flyover data deliverables will include a lidar flight report documenting sensor make/model, operational settings, flight altitude, PDOP conditions, base station ID/location, etc. and the SBET flight trajectory files derived from the airborne GPS/IMU recordings of sensor position and orientation.

3.4 Lidar Data Download, QC, Georeferencing

At the end of each day's flying the lidar system operator will copy raw captured data on to multiple external drives, one of which is shipped overnight to Kucera's production office and one of which will remain with the flight crew as a backup. The sensor operator will download the latest flight management system database and electronically transmit this data along with the raw GPS/IMU measurement data to Kucera's headquarters office for processing/review. The extracted GPS/INS also is used for a "quick look"/immediate visual evaluation of the raw lidar return in decimated, real-time GPS-georeferenced form. System performance, errors, confirmation of successful lines, flight trajectory and coverage will be graphically and statistically compared to the original planned flight information. Any part of the mission in question will be analyzed in the quick-look lidar output, and if necessary a specific reflight flight plan database is created as a result and sent back to the flight crew. Once the mission is accepted, the airborne GPS/IMU survey data can be fully processed, and a final trajectory file used to output all data in its final LAS format.

The raw data is converted to a georeferenced point cloud in LAS format using Leica's ALS Post Processor software. ALSpp will use the following information to produce the LAS point cloud:

- Final trajectory file from GPS/INS.
- Factory calibration values unique and specific to all the various components of this particular sensor.
- IMU boresight calibration.
- Atmospheric conditions.

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

- Intensity and sensor gain control values.
- Datum transformation and project information to output LAS point cloud in proper coordinate system.

3.5 Lidar Data Classification and Deliverables

The georeferenced return will be cut into manageable tile sizes, and then divided into small, automatically and manually selected sample data sets taken from several different terrain and land cover locations within the project area. These data samples are chosen to include periodically spaced data between flight lines and flight missions and efficiently serve several purposes:

- To evaluate and correct data calibration misalignment.
- To measure relative accuracy between flightlines
- To iteratively train, adjust, and ultimately customize the classification algorithms within Terrascan.

Calibration misalignment will be computed and on every mission uniquely using a step – by – step method of computing and correcting per mission the roll, pitch, heading, mirror, and GPS errors.

Terrasolid's Terrascan will be used initially as the primary software for project setup and data classification. The data will be recut to manageable and logical tile sizes. Resultant shaded surface models will be created and overlaid with the actual point data using LP360 to analyze the bare earth and data classification results.

After final classification, every tile will be run through three internal QC scripts: (1) to classify and evaluate the initial sample data for relative mismatches in the bare earth by flightline and flight missions, (2) to compare the control points to the unedited bare earth class to ensure absolute accuracy is being met and (3) check the project files of data for data outliers, data gaps, and potential classification blunders. A shapefile of polygons is created highlighting areas to be checked. Every tile will be inspected manually using several approaches, both achievable in LP360 and Terrasolid's software suite. The lidar points are displayed, a shaded surface is created, with source ortho imagery and/or mapping being displayed in the background.

A script will be run using available road, stream, and/or bridge data as a guide to search for wrongly classified culverts and bridges in the DEM. The classification will be accurate to within 98% for all non-withheld points, including unclassified points.

The lidar return deliverables will be:

- Raw georeferenced "point cloud" return in LAS V1.4
- First return in LAS V1.4
- Classified return for ASPRS Classes 1, 2, 7, 9, 10, 17, 18
- Lidar acquisition and accuracy reports
- FGDC metadata

4. BREAKLINE FEATURE COMPILATION

4.1 Breakline Feature Type:

The breakline features compiled will include all hydro features and road edges.

4.2 Compilation Technology/Methodology:

The breakline features will be compiled on BAE Socet Set and/or Cardinal Systems VR1 softcopy stereoplotters from synthetic stereo models generated from the lidar intensity return using a GeoCue lidargrammetry

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

workstation running LIDAR1 CuePac software. The lidargrammetry capability is enabled by using the lidar intensity return as a pseudo image with corresponding lidar elevation data applied. The elevation-applied intensity image strips are created in duplicate, with one strip having a virtual "offset". The intensity strips are viewed together with their offset duplicates on the softcopy stereoplotter in the same fashion as stereo aerial photography, with stereo viewing glasses providing a stereo perception of the lidar return. The feature breaklines are compiled in true 3D form from the stereo intensity view using the stereoplotter's vector stereo mapping functionality.

Kucera's approach is to use the intensity data of all classified return (as opposed to strictly bare earth) in the compilation process, which provides the stereocompiler with visualization of above ground features which support the interpretation of hydro feature breaklines. The varying return classes are assigned different colors to further aid the visualization and stereo interpretation/compilation process.

Hydro features used for hydro flattening (i.e., water bodies with 2 acre and greater surface area, streams and rivers 100' and greater in width) will be compiled with proper flow direction and polygon closure. Smaller hydro features will be compiled as needed for 1' contour generation.

As a quality control measure, the compiled hydro feature elevations will be compared with the ignored ground lidar return elevations around the water bodies to verify general agreement. Tolerances will be set to flag "digging" or "floating" water bodies for review and elevation adjustment.

4.3 Deliverable:

The compiled breaklines will be provided as a deliverable in geodatabase or other ISA specified format.

5. HYDRO FLATTENED DEM

5.1 Generation Procedures and Technologies:

The edited hydro flattening polygons will be processed in combination with the classified bare earth lidar ground return to a 1m cell raster DEM using ArcGIS 3D Analyst or ERDAS Imagine software, with the DEM gridding process creating fully "flat"/single elevation water surfaces. The "hydro-flattened" DEM will be furnished as a deliverable in GeoTIFF or other ISA specified format with the specified tiling, and will be accompanied by corresponding USGS-compatible FGDC metadata in XML format.

Kucera's quality and accuracy evaluation of the hydro-flattened DEM data will include the following procedures:

- Direct digital review of the data as a 2D point file and as TIN, cross-section, and 3D landscapes to check for proper aesthetic/natural appearance and absence of anomalies.
- Generation of "check" contours (1' interval) from the data and review for generally proper formation.
- Comparison of elevations of surveyed ground land cover check points DEM derived surface elevations for same location and determine individual point and RMSE vertical displacement over the checked area, with results required to be within specified accuracy tolerances and reported in associated metadata.

6. DTM AND CONTOUR TOPOGRAPHY

6.1 DTM Components:

The digital terrain model (DTM) used for contour generation will consist of the lidar bare earth return in "model keypoint" form and all compiled hydro feature and road edge breaklines.

Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services City of Indianapolis and Marion County, Indiana

6.2 Contour Generation:

The contour topography will be generated in continuous form from the project DTM using Inpho SCOP, a modified TIN-based contour interpolation program which has an advanced "floating Z" contour-smoothing (splining) algorithm and residual output for quality control. The SCOP program has a number of features which make it superior to other TIN-based programs for the generation of contours which are smoothed and which require minimal post-generation editing for acceptable cartographic appearance. SCOP will use horizontal and vertical splining in contour formation to produce a smoother, more accurate contour representation.

6.3 Data Edit:

The contour topography will be batch and manually edited initially on dedicated Cardinal Systems VR1 editing workstations to produce a clean, seamless, layered feature database. The editing process will include snapping/joining of data compiled from adjacent flight lines/image swaths, elimination of dangling nodes and undershoots/overshoots, addition of spot elevations at high and low points of closed contours, intersections, saddles/troughs, water body centroids, check of elevation attribute, and check of contour layering, i.e., index, intermediate, depression, etc. All batch edit functions performed are subject to manual review and edit as needed before proceeding with the data conversion.

6.4 Data Conversion:

The edited data files will be converted to and delivered in individual tile, single areawide files, or other units as specified. Before commencing with the data conversion work, translation tables will be developed based on the specified layering scheme/database design and reviewed with ISA for approval.

For the conversion to ESRI geodatabase the following general process will be used:

- Set up template files based on the GIS project database design.
- Use direct shapefile translator to convert edited digital map sheet files to GIS format.
- Create polygons in ArcMap for polygon layers.
- Review mapping directly in ArcMap with ortho backdrop for conversion problems/edits.
- Populate attribute fields, using database linkage to retrieve attributes from existing mapping as needed.
- Perform attribute quality control review using database management tools.

The mapping will be delivered in ESRI geodatabase form. Backup copies of all intermediate and final digital files will be maintained indefinitely.

7. METADATA

7.1 Procedures and Deliverables:

With the delivery of the finalized lidar return, hydro-flattened DEM, and DTM/contour mapping Kucera will provide FGDC project level metadata in XML format. A metadata questionnaire will be provided to complete and return indicating points of contact, distribution process, and other ISA-specific information as needed to complete the metadata. Kucera will provide all technical/process details required in the metadata, technologies/methodologies used, accuracy assessment, etc. The USGS TKME metadata parser will be used for QC of the metadata format and content.

Attachment B

Fee Schedule

**Scope of Work Statement for Aerial Lidar, DEM, and DTM/Contour Mapping Services
City of Indianapolis and Marion County, Indiana**

Final Fee Schedule

Item/Phase	FEE				
	2016	2017	2018	2019	2020
3. Ground control survey for lidar(20 points)	5,900				
7. 2016 QL2 aerial lidar survey, NVA & VVA accuracy test, raw and classified return, lidar reports	38,000	14,000			
8. DTM with hydro and road edge breaklines, hydro-flattened DEM, 1' contour topography with spot elevations		80,000	80,000		

- Notes:
- A. All fees are for County + 1 mile buffer coverage area – approximately 490 square miles.
 - B. All fees include specified phase deliverables and applicable metadata.
 - C. Item 7 deliverables to County by October 2016
 - D. Item 8 deliverables to County by December 2017