



THE CITY OF WINNIPEG

TENDER

TENDER NO. 473-2023

SUPPLY AND DELIVERY OF MATRICE 350 DRONE SYSTEM

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND DELIVERY OF MATRICE 350 DRONE SYSTEM

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, June 28, 2023.

B2.2 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

B3.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B3.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B4. CONFIDENTIALITY

B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

B5. ADDENDA

B5.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.3 Addenda will be available on the MERX website at www.merx.com.
- B5.4 The Bidder is responsible for ensuring that they have received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

B6. SUBSTITUTES

- B6.1 The Work is based on the materials, equipment, methods and products specified in the Tender.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the material, equipment, method or product as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the Contract;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the Contract.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in their sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons they wish to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base their Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B16.
- B6.9 No later claim by the Contractor for an addition to the price(s) because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID SUBMISSION

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid/Proposal; and
 - (b) Form B: Prices.
- B7.2 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.3 The Bid shall be submitted electronically through MERX at www.merx.com.
- B7.3.1 Bids will **only** be accepted electronically through MERX.
- B7.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B16.1(a).

B8. BID

- B8.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in their own name, their name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than their own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in their own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by their duly authorized officer or officers;
 - (d) if the Bidder is carrying on business under a name other than their own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.1.1 Prices on Form B: Prices shall include:

- (a) duty;
- (b) freight and cartage;
- (c) Provincial and Federal taxes [except the Goods and Services Tax (GST) and Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable] and all charges governmental or otherwise paid;
- (d) profit and all compensation which shall be due to the Contractor for the Work and all risks and contingencies connected therewith.

B9.1.2 Prices on Form B: Prices shall not include Environmental Handling Charges (EHC) or fees, which shall be extra where applicable.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9.4 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B9.5 Bidders are advised that the calculation indicated in B16.4 will prevail over the Total Bid Price entered in MERX.

B9.6 The Bidders shall provide a list price, discount percentage and Unit Price for each item shown on Form B: Prices.

B10. DISCLOSURE

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- (a) N/A

B11. CONFLICT OF INTEREST AND GOOD FAITH

B11.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B11.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

- (a) other commitments;

- (b) relationships;
- (c) financial interests; or
- (d) involvement in ongoing litigation;

that could or would be seen to:

- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
 - (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of their participation in the Tender process or the Work; or
 - (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

B11.3 In connection with their Bid, each entity identified in B11.2 shall:

- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
- (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
- (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

B11.4 Without limiting B11.3, the City may, in their sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in their sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in their sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B11.5 Without limiting B11.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in their sole discretion:

- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their employees proposed for the Work;
- (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in their sole discretion, determines cannot be avoided or mitigated;
- (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B11.4 to avoid or mitigate a Conflict of Interest; and
- (d) disqualify a Bidder if the Bidder, or one of their employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

B11.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in their sole discretion.

B12. QUALIFICATION

B12.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf>

B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract;
- (c) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba); and
- (d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B12.4 and D4.1) ; and
- (e) be an approved affiliate partner of DJI.

B12.4 Further to B12.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at <http://www.accessibilitymb.ca/training.html> for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B12.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

B13.1 Bids will not be opened publicly.

B13.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated and pending review and verification of conformance with requirements) will be available on the MERX website at www.merx.com.

B13.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at www.merx.com.

B13.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B13.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to

Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B14. IRREVOCABLE BID

- B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.
- B14.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B15. WITHDRAWAL OF BIDS

- B15.1 A Bidder may withdraw their Bid without penalty at any time prior to the Submission Deadline.

B16. EVALUATION OF BIDS

- B16.1 Award of the Contract shall be based on the following bid evaluation criteria:
 - (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6;
- B16.2 Further to B16.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities if the interests of the City so require.
- B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in their Bid or in other information required to be submitted, that they are qualified.
- B16.4 Further to B16.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
 - B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
 - B16.4.2 Bidders are advised that the calculation indicated in B16.4 will prevail over the Total Bid Price entered in MERX.
- B16.5 This Contract will be awarded as a whole.

B17. AWARD OF CONTRACT

- B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B17.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.
 - B17.2.1 Without limiting the generality of B17.2, the City will have no obligation to award a Contract where:

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with their own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

- B17.3 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.
- B17.4 Further to Paragraph 7 of Form A: Bid/Proposal and C4, the City may issue a purchase order to the successful Bidder in lieu of the execution of a Contract.
- B17.4.1 The Contract Documents, as defined in C1.1(p), in their entirety shall be deemed to be incorporated in and to form a part of the purchase order notwithstanding that they are not necessarily attached to or accompany said purchase order.
- B17.5 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for the Supply of Goods* (Revision 2020-01-31) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for the Supply of Goods* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Tender to a section, clause or subclause with the prefix “C” designates a section, clause or subclause in the *General Conditions for Supply of Goods*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for the Supply of Goods*, these Supplemental Conditions are applicable to the Work of the Contract.

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the supply and delivery of Matrice 350 Drone System.

D3. DEFINITIONS

D3.1 When used in this Tender:

- (a) "**Supply Chain Disruption**" means an inability by the Contractor to obtain goods or services from third parties necessary to perform the Work of the Contract within the schedule specified therein, despite the Contractor making all reasonable commercial efforts to procure same. Contractors are advised that increased costs do not, in and of themselves, amount to a Supply Chain Disruption;

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Nick Kasper
RPAS Program Coordinator
Telephone No.: 204- 415-4210
Email Address: nkasper@winnipeg.ca

D5. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

D5.1 The Accessibility for Manitobans Act (AMA) imposes obligations on The City of Winnipeg to provide accessible customer service to all persons in accordance with the Customer Service Standard Regulation ("CSSR") to ensure inclusive access and participation for all people who live, work or visit Winnipeg regardless of their abilities.

D5.1.1 The Contractor agrees to comply with the accessible customer service obligations under the CSSR and further agrees that when providing the Goods or Services or otherwise acting on the City of Winnipeg's behalf, shall comply with all obligations under the AMA applicable to public sector bodies.

D5.1.2 The accessible customer service obligations include, but are not limited to:

- (a) providing barrier-free access to goods and services;
- (b) providing reasonable accommodations;
- (c) reasonably accommodating assistive devices, support persons, and support animals;
- (d) providing accessibility features e.g. ramps, wide aisles, accessible washrooms, power doors and elevators;
- (e) inform the public when accessibility features are not available;
- (f) providing a mechanism or process for receiving and responding to public feedback on the accessibility of all goods and services; and
- (g) providing adequate training of staff and documentation of same.

D6. UNFAIR LABOUR PRACTICES

- D6.1 Further to C3.2, the Contractor declares that in bidding for the Work and in entering into this Contract, the Contractor and any proposed Subcontractor(s) conduct their respective business in accordance with established international codes embodied in United Nations Universal Declaration of Human Rights (UDHR) <https://www.un.org/en/about-us/universal-declaration-of-human-rights> International Labour Organization (ILO) [https://www.ilo.org/global/lang--en/index.htm](https://www.ilo.org/global/lang-en/index.htm) conventions as ratified by Canada.
- D6.2 The City of Winnipeg is committed and requires its Contractors and their Subcontractors, to be committed to upholding and promoting international human and labour rights, including fundamental principles and rights at work covered by ILO eight (8) fundamental conventions and the United Nations Universal Declaration of Human Rights which includes child and forced labour.
- D6.3 Upon request from the Contract Administrator, the Contractor shall provide disclosure of the sources (by company and country) of the raw materials used in the Work and a description of the manufacturing environment or processes (labour unions, minimum wages, safety, etc.).
- D6.4 Failure to provide the evidence required under D6.3, may be determined to be an event of default in accordance with C16.
- D6.5 In the event that the City, in its sole discretion, determines the Contractor to have violated the requirements of this section, it will be considered a fundamental breach of the Contract and the Contractor shall pay to the City a sum specified by the Contract Administrator in writing ("Unfair Labour Practice Penalty"). Such a violation shall also be considered an Event of Default, and shall entitle the City to pursue all other remedies it is entitled to in connection with same pursuant to the Contract.
- D6.5.1 The Unfair Labour Practice Penalty shall be such a sum as determined appropriate by the City, having due regard to the gravity of the Contractor's violation of the above requirements, any cost of obtaining replacement goods/ services or rectification of the breach, and the impact upon the City's reputation in the eyes of the public as a result of same.
- D6.5.2 The Contractor shall pay the Unfair Labour Practice Penalty to the City within thirty (30) Calendar Days of receiving a demand for same in accordance with D6.5. The City may also hold back the amount of the Unfair Labour Practice Penalty from payment for any amount it owes the Contractor.
- D6.5.3 The obligations and rights conveyed by this clause survive the expiry or termination of this Contract, and may be exercised by the City following the performance of the Work, should the City determine, that a violation by the Contractor of the above clauses has occurred following same. In no instance shall the Unfair Labour Practice Penalty exceed the total of twice the Contract value.

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

- D7.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D8. COMMENCEMENT

- D8.1 The Contractor shall not commence any Work until they are in receipt of a notice of award from the City authorizing the commencement of the Work.
- D8.2 The Contractor shall not commence any Work until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D7;
 - (ii) evidence of the workers compensation coverage specified in C6.17; and
 - (iii) the direct deposit application form specified in D12
 - (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D9. DELIVERY

- D9.1 Goods shall be delivered within thirty (30) Business Days of the award of contract, f.o.b. destination, freight prepaid to:
- WFPS Academy
2546 McPhillips Street
Winnipeg, MB
R2P 2T2
- D9.2 The Contractor shall confirm each delivery with the Contract Administrator or their designate, at least two (2) Business Days before delivery.
- D9.3 Goods shall be delivered between 8:00 a.m. and 4:00 p.m. on Business Days.
- D9.4 The Contractor shall off-load goods as directed at the delivery location.

D10. SUPPLY CHAIN DISRUPTION SCHEDULE DELAYS

- D10.1 The City acknowledges that the schedule for this Contract may be impacted by Supply Chain Disruption. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the delivery requirements and schedule identified in the Contract, in close consultation with the Contract Administrator.
- D10.2 If the Contractor is delayed in the performance of the Work by reason of Supply Chain Disruption, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.
- D10.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether a Supply Chain Disruption will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to a Supply Chain Disruption, including but not limited to evidence related to ordering of Material or Goods, production and/or manufacturing schedules or availability of staff as appropriate.
- D10.4 For any delay related to Supply Chain Disruption and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D10.3. Failure to provide this notice will result in no additional time delays being considered by the City.
- D10.5 The Work schedule, including the durations identified in D9 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator.
- D10.6 Any time or cost implications as a result of Supply Chain Disruption and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

MEASUREMENT AND PAYMENT

D11. INVOICES

D11.1 Further to C10, the Contractor shall submit an invoice for each order delivered to:

The City of Winnipeg
Corporate Finance - Accounts Payable
4th Floor, Administration Building, 510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: 204-949-0864
Send Invoices to CityWpgAP-INVOICES@winnipeg.ca
Send Invoice Inquiries to CityWpgAP-INQUIRIES@winnipeg.ca

D11.2 Invoices must clearly indicate, as a minimum:

- (a) the City's purchase order number;
- (b) date of delivery;
- (c) delivery address;
- (d) type and quantity of goods delivered;
- (e) the amount payable with GST, MRST, and any applicable environmental handling charges/fees identified and shown as separate amounts; and
- (f) the Contractor's GST registration number.

D11.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D12. PAYMENT

D12.1 Further to C10, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at https://winnipeg.ca/finance/files/Direct_Deposit_Form.pdf .

D13. PAYMENT SCHEDULE

D13.1 Further to C10, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.

WARRANTY

D14. WARRANTY

D14.1 Warranty is as stated in C11.

DISPUTE RESOLUTION

D15. DISPUTE RESOLUTION

D15.1 If the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator, the Contractor shall act in accordance with the Contract Administrator's opinion, determination, or decision unless and until same is modified by the process followed by the parties pursuant to D15.

D15.2 The entire text of C19.4 is deleted, and amended to read: "Intentionally Deleted"

D15.3 The entire text of C19.5 is deleted, and amended to read:

- (a) If Legal Services has determined that the Disputed Matter may proceed in the Appeal Process, the Contractor must, within ten (10) Business Days of the date of the Legal Services Response Letter, submit their written Appeal Form, in the manner and format set out on the City's Materials Management Website, to the Chief Administrative Officer, and to the Contract Administrator. The Contractor may not raise any other disputes other than the Disputed Matter in their Appeal Form.

D15.4 Further to C19, prior to the Contract Administrator's issuance of a Final Determination, the following informal dispute resolution process shall be followed where the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator ("Dispute"):

- (a) In the event of a Dispute, attempts shall be made by the Contract Administrator and the Contractor's equivalent representative to resolve Disputes within the normal course of project dealings between the Contract Administrator and the Contractor's equivalent representative.
- (b) Disputes which in the reasonable opinion of the Contract Administrator or the Contractor's equivalent representative cannot be resolved within the normal course of project dealings as described above shall be referred to a without prejudice escalating negotiation process consisting of, at a minimum, the position levels as shown below and the equivalent Contractor representative levels:
 - (i) The Contract Administrator;
 - (ii) Supervisory level between the Contract Administrator and applicable Department Head;
 - (iii) Department Head.

D15.4.1 Names and positions of Contractor representatives equivalent to the above City position levels shall be determined by the Contractor and communicated to the City at the pre-commencement or kick off meeting.

D15.4.2 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.

D15.4.3 Both the City and the Contractor agree to make all reasonable efforts to conduct the above escalating negotiation process within twenty (20) Business Days, unless both parties agree, in writing, to extend that period of time.

D15.4.4 If the Dispute is not resolved to the City and Contractor's mutual satisfaction after discussions have occurred at the final escalated level as described above, or the time period set out in D15.4.3, as extended if applicable, has elapsed, the Contract Administrator will issue a Final Determination as defined in C1.1(v), at which point the parties will be governed by the Dispute Resolution process set out in C19.

THIRD PARTY AGREEMENTS

D16. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D16.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D16.2 Further to D16.1, in the event that the obligations in D16 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D16.3 For the purposes of D16:

- (a) "**Government of Canada**" includes the authorized officials, auditors, and representatives of the Government of Canada; and

- (b) **“Government of Manitoba”** includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D16.4 Modified Insurance Requirements

- D16.4.1 Where applicable, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and their Ministers, officers, employees, and agents shall be added as additional insureds.
- D16.4.2 If applicable the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.
- D16.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.
- D16.4.4 Insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.
- D16.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D16.5 Indemnification By Contractor

- D16.5.1 In addition to the indemnity obligations outlined in C15 of the General Conditions for Goods, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.
- D16.5.2 The Contractor agrees that in no event will Canada or Manitoba, their respective officers, servants, employees or agents be held liable for any damages in contract, tort (including negligence) or otherwise, for:
- (a) any injury to any person, including, but not limited to, death, economic loss or infringement of rights;
 - (b) any damage to or loss or destruction of property of any person; or
 - (c) any obligation of any person, including, but not limited to, any obligation arising from a loan, capital lease or other long term obligation;

in relation to this Contract or the Work.

D16.6 Records Retention and Audits

- D16.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those

records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D16.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Goods, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D16.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D16.7 Other Obligations

D16.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D16.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D16.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D16.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

D16.7.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.

D16.7.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS

- E1.1 These Specifications shall apply to the Work.
- E1.2 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B6. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B6.

E2. DRONE SYSTEM

- E2.1 The Contractor shall supply and deliver drone systems in accordance with the requirements hereinafter specified.
- E2.2 The drone system shall include, but is not limited to the following:
- (a) 1 unit - Aircraft body
 - (b) 1 unit - DJI Smart Controller Enterprise
 - (c) 1 unit - USB Charger
 - (d) 1 unit – USB-C cable
 - (e) 1 unit - WB37 Intelligent batteries
 - (f) 2 units - 2110 Propellers (CW)
 - (g) 2 units - 2110 Propellers (CCW)
 - (h) 2 units - Landing gear
 - (i) 1 unit - Spare Stick Cover
 - (j) 2 units - Spare Propeller Holder
 - (k) 4 units - Spare Gimbal Damper
 - (l) 1 unit - USB Cable (with Double A Ports)
 - (m) 1 unit - Vision System Calibration Plate
 - (n) 1 unit - Carrying Case
 - (o) 1 unit - Smart Controller Lanyard
 - (p) 1 set - Rubber Port Cover
 - (q) 1 set - Screws and Tools
 - (r) 2 units - TB65 Intelligent Flight Batteries
 - (s) 1 unit - BS65 Intelligent Battery Station
 - (t) Protection program for the aircraft and camera system (DJI Care Enterprise Plus)

E3. DJI MATRICE 350 RTK DRONE AIRCRAFT

- E3.1 Aircraft Body:
- (a) Dimensions
 - (i) Unfolded, propellers excluded, 810 x 670 x 430 mm (L x W x H)
 - (ii) Folded, propellers included, 430 x 420 x 430 mm (L x W x H)
 - (b) Diagonal Wheelbase
 - (i) 895 mm

- (c) Weight (with single downward gimbal)
 - (i) Approximately 3.6 kg (without batteries)
 - (ii) Approximately 6.3 kg (with two TB65 batteries)
- (d) Max Payload
 - (i) Approximately 2.7 kg
- (e) Max Takeoff Weight
 - (i) Approximately 9 kg
- (f) Operating Frequency
 - (i) 2.4000-2.4835 GHz
 - (ii) 5.725-5.850 GHz
- (g) Effective Isotropic Radiated Power (EIRP)
 - (i) 2.4000-2.4835 GHz:
 - (i) 29.5 dBm (FCC); 18.5dBm (CE)
 - (ii) 18.5 dBm (SRRC); 18.5dBm (MIC)
 - (ii) 5.725-5.850 GHz:
 - (i) 28.5 dBm (FCC); 12.5dBm (CE)
 - (ii) 28.5 dBm (SRRC)
- (h) Hovering Accuracy (P-mode with GPS)
 - (i) Vertical:
 - (i) ± 0.1 m (Vision System enabled)
 - (ii) ± 0.5 m (GPS enabled)
 - (iii) ± 0.1 m (RTK enabled)
 - (ii) Horizontal:
 - (i) ± 0.3 m (Vision System enabled)
 - (ii) ± 1.5 m (GPS enabled)
 - (iii) ± 0.1 m (RTK enabled)
- (i) Real-Time Kinematic (RTK) Positioning Accuracy
 - (i) When RTK enabled and fixed:
 - (i) 1 cm+1 ppm (Horizontal)
 - (ii) 1.5 cm + 1 ppm (Vertical)
- (j) Max Angular Velocity
 - (i) Pitch: 300°/s, Yaw: 100°/s
- (k) Max Pitch Angle
 - (i) 30° (P-mode, Forward Vision System enabled: 25°)
- (l) Max Ascent Speed
 - (i) S mode: 6 m/s
 - (ii) P mode : 5 m/s
- (m) Max Descent Speed (vertical)
 - (i) S mode: 5 m/s
 - (ii) P mode : 4 m/s
- (n) Max Descent Speed (tilt)
 - (i) S Mode: 7 m/s
- (o) Max Speed
 - (i) S mode: 23 m/s
 - (ii) P mode : 17 m/s

- (p) Service Ceiling Above Sea Level
 - (i) 5000 m (with 2110 propellers, takeoff weight \leq 7 kg) / 7000 m (with 2195 propellers, takeoff weight \leq 7 kg)
- (q) Max Wind Resistance
 - (i) 15 m/s
- (r) Max Flight Time
 - (i) 55 min
- (s) Supported DJI Gimbals
 - (i) Zenmuse XT2/XT S/Z30/H20/H20T/H20N
- (t) Supported Gimbal Configurations
 - (i) Single Downward Gimbal, Dual Downward Gimbals, Single Upward Gimbal, Upward and Downward Gimbals, Triple Gimbals
- (u) Ingress Protection Rating
 - (i) IP45
- (v) Global Navigation Satellite System (GNSS)
 - (i) GPS, GLONASS, BeiDou, Galileo
- (w) Operating Temperature
 - (i) -20°C to 50°C (-4°F to 122° F)

E3.2 Remote Controller:

- (a) Operating Frequency
 - (i) 2.4000-2.4835 GHz
 - (ii) 5.725-5.850 GHz
- (b) Max Transmitting Distance (unobstructed, free of interference)
 - (i) NCC/FCC: 15 km
 - (ii) CE/MIC: 8 km
 - (iii) SRRC: 8 km
- (c) EIRP
 - (i) 2.4000-2.4835 GHz:
 - (i) 29.5 dBm (FCC) 18.5dBm (CE)
 - (ii) 18.5 dBm (SRRC); 18.5dBm (MIC)
 - (ii) 5.725-5.850 GHz:
 - (i) 28.5 dBm (FCC); 12.5dBm (CE)
 - (ii) 20.5 dBm (SRRC)
- (d) External battery
 - (i) Name: WB37 Intelligent Battery
 - (i) Capacity: 4920 mAh
 - (ii) Voltage: 7.6V
 - (iii) Type: LiPo
 - (iv) Energy: 37.39Wh
 - (v) Charging time (using BS65 Intelligent Battery Station): 70 minutes (15°C to 45°C); 130 minutes (0°C to 15°C)
- (e) Built-in battery
 - (i) Type: 18650 lithium ion battery (5000 mAh @ 7.2 V)
 - (i) Charging: Use a USB charger with specification of 12V / 2A
 - (ii) Rated power: 17 W

(iii) Charging time: 2 hours and 15 minutes (Using a USB charger with specification of 12V / 2A)

- (f) Battery Life
 - (i) Built-in battery: approximately 2.5h
 - (ii) Built-in battery and external battery: Approx. 4.5h
- (g) USB Power Supply
 - (i) 5 V / 1.5 A
- (h) Operating Temperature
 - (i) -20°C to 40°C (-4 °F to 104 °F)

E3.3 Vision System

- (a) Obstacle Sensing Range
 - (i) Forward/Backward/Left/Right: 0.7-40m
 - (ii) Upward/Downward: 0.6-30m
- (b) Field of View (FOV)
 - (i) Forward/Backward/Downward: 65° (H), 50° (V)
 - (ii) Left/Right/Upward: 75°(H), 60°(V)
- (c) Operating Environment
 - (i) Surfaces with clear patterns and adequate lighting (> 15 lux)

E3.4 Infrared Time-of-Flight (ToF) Sensing System

- (a) Obstacle Sensing Range
 - (i) 0.1-8m
- (b) FOV
 - (i) 30° (±15°)
- (c) Operating Environment
 - (i) Large, diffuse and reflective obstacles (reflectivity >10%)

E3.5 Top and bottom auxiliary light

- (a) Effective lighting distance
 - (i) 5 m

E3.6 First-Person View (FPV) Camera

- (a) Resolution
 - (i) 960p
- (b) FOV
 - (i) 145°
- (c) Frame rate
 - (i) 30 fps

E3.7 Intelligent Flight Battery

- (a) Name
 - (i) TB65
- (b) Capacity
 - (i) 5935 mAh
- (c) Voltage
 - (i) 52.8 V
- (d) Battery Type

- (i) LiPo 12S
- (e) Energy
 - (i) 274 Wh
- (f) Net Weight
 - (i) Approx. 1.35 kg
- (g) Operating Temperature
 - (i) -4°F to 122°F (-20°C to 50°C)
- (h) Ideal storage temperature
 - (i) 71.6°F to 86°F (22°C to 30°C)
- (i) Charging Temperature
 - (i) -4°F to 104°F (-20°C to 40°C)
 - (ii) When the temperature is lower than 5°C, the self-heating function will be automatically enabled. Charging in a low temperature may shorten the lifetime of the battery
- (j) Charging time
 - (i) Using BS65 Intelligent Battery Station:
 - (i) 220V input: 60 minutes (fully charging two TB65 batteries), 30 minutes (charging two TB65 batteries from 20% to 90%)
 - (ii) 110V input: 70 minutes (fully charging two TB65 batteries), 40 minutes (charging two TB65 batteries from 20% to 90%)

E3.8 BS65 Intelligent Battery Station

- (a) Dimensions
 - (i) 501 x 403 x 252 mm
- (b) Net Weight
 - (i) 8.37kg
- (c) Maximum Capacity
 - (i) TB65 Intelligent Flight Battery x 8
 - (ii) WB37 Intelligent Battery x 4
- (d) Input
 - (i) 100-120 VAC, 50-60 Hz / 220-240 VAC, 50-60 Hz
- (e) Max. Input Power
 - (i) 1070W
- (f) Output Power
 - (i) 100-120 V: 750 W
 - (ii) 220-240 V: 992 W
- (g) Operating Temperature
 - (i) -4°F to 104°F (-20°C to 40°C)

E4. ZENMUSE H20N CAMERA SYSTEM

E4.1 Camera

- (a) Weight
 - (i) Zenmuse H20N: 828±5 g
- (b) Dimensions
 - (i) Zenmuse H20N: 167 x 135 x 161 mm
- (c) Ingress Protection Rating

- (i) IP44
- (d) Operating Temperature
 - (i) -20° to 50° C (Temperature Measurement is only available between -10° to 50° C)
- (e) Storage Temperature
 - (i) -20° to 60° C
- (f) Laser Safety
 - (i) Class 1M (IEC 60825-1:2014)

E4.2 Gimbal

- (a) Angular Vibration Range
 - (i) $\pm 0.01^\circ$
- (b) Mount
 - (i) Detachable
- (c) Controllable Range
 - (i) Pitch: -120° to +30°
 - (ii) Yaw: $\pm 320^\circ$
- (d) Mechanical Range
 - (i) Pitch: -132.5° to +42.5°
 - (ii) Yaw: $\pm 330^\circ$
 - (iii) Roll: -90° to +60°

E4.3 Zoom Camera

- (a) Sensor
 - (i) 1/1.7" CMOS, 20 MP
- (b) Lens
 - (i) DFOV: 66.6°-4°
 - (ii) Focal length: 6.83-119.94 mm (equivalent: 31.7-556.2 mm)
 - (iii) Aperture: f/2.8-f/11 (normal), f/1.6-f/11 (night scene)
 - (iv) Focus: 1 m to ∞ (wide), 8 m to ∞ (telephoto)
- (c) Focus Mode
 - (i) MF/AF-C/AF-S
- (d) Exposure Mode
 - (i) Auto, Manual
- (e) Exposure Compensation
 - (i) ± 3.0 (1/3 increments)
- (f) Metering Mode
 - (i) Spot metering, Center-weighted metering
- (g) AE LOCK
 - (i) Supported
- (h) Electronic Shutter Speed
 - (i) 1 ~ 1/8000 s
- (i) ISO Range
 - (i) Video: 100 - 25600
 - (ii) Photo: 100 - 25600
- (j) Video Resolution
 - (i) 3840 x 2160 at 30fps, 1920 x 1080 at 30fps

- (k) Video Format
 - (i) MP4
- (l) Video subtitles
 - (i) Supported
- (m) Photo Size
 - (i) 5184 x 3888
- (n) Photo Format
 - (i) JPEG

E4.4 Wide Camera

- (a) Sensor
 - (i) 1/2.3" CMOS, 12 MP
- (b) Lens
 - (i) DFOV: 82.9°
 - (ii) Focal length: 4.5 mm (equivalent: 24 mm)
 - (iii) Aperture: f/2.8
 - (iv) Focus: 1 m to ∞
- (c) Exposure Mode
 - (i) Auto
- (d) Exposure Compensation
 - (i) ± 3.0 (1/3 increments)
- (e) Metering Mode
 - (i) Spot metering, Center-weighted metering
- (f) AE LOCK
 - (i) Supported
- (g) Shutter Speed
 - (i) 1 ~ 1/8000
- (h) ISO Range
 - (i) Video: 100 - 25600
 - (ii) Photo: 100 - 25600
- (i) Video Resolution
 - (i) 1920x1080 at 30fps
- (j) Video Format
 - (i) MP4
- (k) Video subtitles
 - (i) Supported
- (l) Photo Size
 - (i) 4056 x 3040
- (m) Photo Format
 - (i) JPEG

E4.5 Thermal Camera (Zemuse H20N)

- (a) Sensor
 - (i) Uncooled VOx Microbolometer
- (b) Lens
 - (i) DFOV: 40.6°

- (ii) Focal length: 13.5 mm (equivalent: 58 mm)
- (iii) Aperture: f/1.0
- (iv) Focus: 5 m to ∞
- (c) Digital Zoom
 - (i) 1x, 2x, 4x, 8x
- (d) Video Resolution
 - (i) 640 x 512 at 30 Hz
- (e) Video Format
 - (i) MP4
- (f) Image Resolution
 - (i) 640 x 512
- (g) Image Format
 - (i) R-JPEG (16 bit)
- (h) Pixel Pitch
 - (i) 12 μ m
- (i) Spectral Band
 - (i) 8-14 μ m
- (j) Sensitivity (NETD)
 - (i) ≤ 50 mK at f/1.0
- (k) Temperature Measurement Method
 - (i) Spot Meter, Area Measurement
- (l) Scene Range
 - (i) -40 °C to 150 °C (High Gain)
 - (ii) -40 °C to 550 °C (Low Gain)
- (m) Temperature alert
 - (i) Supported
- (n) FFC
 - (i) Auto/ manual
- (o) Palette
 - (i) White hot/Fulgurite/Iron Red/Hot Iron/Medical/Arctic/Rainbow 1/Rainbow 2/Tint/Black Hot

E4.6 Laser Rangefinder

- (a) Wave length
 - (i) 905 nm
- (b) Measurement range
 - (i) 3-1200 m (to a vertical surface with ≥ 12 m diameter and 20% reflection rate)
- (c) Measurement accuracy
 - (i) $\pm (0.2 \text{ m} + D \times 0.15\%)$
 - (ii) D is the distance to a vertical surface

E4.7 Camera Features

- (a) Hybrid Optical Zoom
 - (i) 23x (DFOV : 4°, EQV : 556.2mm)
- (b) Max. Zoom
 - (i) 200x (DFOV : 0.5°, EQV : 4800mm)

- (c) One Click Capture
 - (i) One click to save the video or picture of 3 cameras (zoom, wide and thermal camera) simultaneously
- (d) Point to Aim
 - (i) Double click on the wide/thermal camera view, then the system will automatically move the gimbal to focus on the point of interest
- (e) High-Res Grid Photo
 - (i) Frame an area of interest in wide camera view, and the zoom camera will automatically capture a set of 20 MP images of the area. These images are stored together with an overview image that can be viewed in greater detail.
- (f) Night Scene
 - (i) Supported (zoom camera)
- (g) Timestamp
 - (i) Including GPS, date, and time

E4.8 Storage

- (a) Supported SD Card
 - (i) MicroSD card (Max capacity: 128 GB, UHS-1 Speed Grade 3 required)
- (b) Supported File Systems
 - (i) FAT32 (\leq 32 GB), exFAT ($>$ 32 GB)
- (c) Supported Micro SD Cards
 - (i) TOSHIBA EXCERIA PRO 32GB micro SD HC II
 - (ii) SanDisk Extreme PRO 32GB 3 A1 micro SD V30 HC I
 - (iii) TOSHIBA EXCERIA PRO 64GB micro SD XC II
 - (iv) SanDisk Extreme PRO 64GB 3 A2 micro SD V30 XC I
 - (v) SAMSUNG EVO 128GB micro SD 3 XC I
 - (vi) TOSHIBA EXCERIA M303E 32GB micro SD HC I
 - (vii) TOSHIBA EXCERIA M303E 64GB micro SD XC I
 - (viii) TOSHIBA EXCERIA M303E 64GB micro SD XC I
 - (ix) TOSHIBA EXCERIA M303 128GB micro SD XC I
 - (x) SAMSUNG EVO 64GB micro SD 3 XC I

E5. LIST PRICE

- E5.1 The Contractor shall provide discount percentage off the List Price (available on the website or other media) for Item No1 and Item No 3 to 10 on Form B: Prices.

E6. APPROVED PRODUCTS

- E6.1 Subject to E1.2, the following products are approved;
 - (a) DJI Matrice 350 RTK Drone System
 - (b) Zenmuse H20N Camera System