Iowa State University

Request for Proposal/Quote No. 63812

CYCLIC/REPEATED LOAD TRIAXIAL TESTING DEVICE (CYCELL)

Overview and General Information

1. **Introduction**. Iowa State University of Science and Technology (also referred to as ISU or University) in Ames, Iowa, is requesting bids to provide and install a cyclic/repeated load triaxial testing device (hereafter called CYCELL) CYCELL for the Civil, Construction and Environmental Engineering (CCCE) Department per the specifications. This CYCELL DEVICE will be used to amongst other capabilities evaluate the anisotropic behavior of geomaterials in 3 directions under field-loading and climactic conditions as further described in the subsequent technical specifications section. ISU reserves the right to make the award(s) in the best interest of the University.

   Contractors should read all materials carefully and note the due date. All questions and comments in reference to this RFP must be directed in *writing* to:

   Kelly M Freel, CPPB
   Senior Procurement Agent V
   kmfreel@iastate.edu
   515-294-9918

2. **Schedule of Events.**

Activity	Date
Issuance of RFP	Thursday, April 5, 2018
Deadline for Receipt of Questions	Thursday, April 19, 2018
Addenda for Questions Posted on ISU Procurement Site	Thursday, April 26, 2018
Proposals Due	**Thursday, May 3, 2018 @ 4:00 PM CT**
*Evaluations Complete	Monday, May 7, 2018
*Award of Contract or Contract Effective Date	Friday, May 10 2018

**Indicates projected dates only*

3. **Pre-Proposal Meeting**. Not applicable. If Contractors have questions on the facility/location of the CYCELL they may contact Paul Kremer, Building Systems Program Manager at pkremer@iastate.edu.

4. **Receipt and Opening of Response**. This RFP response is due **Thursday**. **May 3, 2018 at 4:00 PM CST** and shall be submitted in one of the following ways:

   - By email at quotedsk@iastate.edu, Subject: RFP 63812 **OR** online submission at https://www.procurement.iastate.edu/vendors/rfp-rfq-submittal (*preferred methods*)
   - By paper or electronic copy to Iowa State University, Procurement Services, Attn: Quote Desk--RFP 63812, 1340 Administrative Services Building, 2221 Wanda Daley Drive, Ames IA 50011-1004
   - By fax to 515-294-9606, Attn: Quote Desk-- RFP 63812

   Any proposal received after the due time specified for the receipt of proposals may be considered as non-responsive.

5. **Evaluation Criteria.** No considerations will be given for system(s) offered, but not included in the written response to this RFP. The evaluation criteria utilized for this RFP may be based upon, but not limited to, the following criteria which are listed in no particular order:

- Ability to meet or exceed technical specifications (Section II)
- Delivery and Installation Schedule (and/or use of interim system)
- Literature review
- Presentation/Demonstration of System(s) design, prototype (if feasible), and/or software, and/or sample testing results etc. if requested
- Responsiveness to RFP terms and conditions
- Ability to provide technical/service support
- Contractor's financial analysis
- Contractor's past experience
- Past performance of Contractor
- Ability to provide satisfactory references
- Warranty
- Payment terms
- Cost
- Training and ease of use
- System upgrade pathways

ISU reserves the right to waive minor differences in the stated specifications, if an offered system is found to be substantially compliant, and its' purchase would be in the University's best interest.

6. **Proposal Process and Evaluation** The proposal process employed by ISU allows Contractors latitude in responding to the needs of our research departments. The features and requirements stated in Section II represent ISU's best assessment of the department's technical requirements. Contractors should communicate with ISU to insure they understand the research requirements of the university. Proposals are then submitted by the Contractors based on instrument configurations that they believe will best meet the needs of the university.

Proposals for the CYCELL device offered will be evaluated on the criteria stated above and will be based on a consensus of the faculty members and research staff charged with acquiring the new instrumentation.

Specifications provided by ISU are intended to reflect the level of performance required to meet research objectives and are not intended to restrict competition

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Section I - Instructions

1.1 Definitions

University	University or ISU is Iowa State University of Science and Technology.
Contractor	Contractor refers to the individual or entity that is proposing or offering to contract for goods or services in the Proposal and is identified in the Acceptance Form.
Contract	Contract will be an ISU issued purchase order and/or a contractual agreement that would be signed by the awarded contractor and an authorized representative of the University.
RFP Documents	All documents issued or posted to the ISU Procurement Services website that pertain to this RFP. This could include original bid documents, addenda, exhibits, plans, etc.
Proposal	All documents submitted by the Contractor as a response to the RFP in accordance with the RFP requirements.
University Representative	University Representative is the individual identified on the Overview and General Information page of this RFP.
Work	Provide labor, required tools, and insurance to perform successful install of equipment.

1.2 Alternate Bids or Offers A system(s) which deviate(s) from the specifications as stated in Section (II) may be offered as an alternate(s). Any such items must be clearly marked as "alternate". Iowa State University and/or its appointed designee will be the sole authority in determining whether an alternate item(s) will be considered as comparable to and/or compatible with the specifications of this bid request.

1.3 Used or Demo Equipment Contractors are encouraged to offer used or demo equipment components in the fabrication of the proposed apparatus assembly as an alternate. Any such items must be clearly marked as "alternate". All such offers must include a description and age of the items offered, a statement relative to the condition of the item(s), and the warranty available. Any order for used or demo equipment will be conditional, subject to acceptance upon inspection by ISU personnel.

1.4 Multiple Proposals ISU is seeking proposals which meet its requirements as outlined in the RFP. If more than one method of meeting these requirements is proposed, each should be labeled "primary," "secondary," etc., submitted separately, and they will be evaluated in accordance with the specific priorities.

1.5 Equality of Equipment The performance specifications outlined herein (Section II) are the basis of this RFP and shall be used to determine equality and adherence of equipment offered. Equipment, in the opinion of ISU, equal to or better than the performance and quality specified will be considered.

1.6 Equipment Configurations The Contractor is encouraged to provide a quotation on any or all equipment configurations which they presently manufacture or are capable of custom manufacturing by the date requested.

In some cases, it may be necessary for components to be purchased from more than one Contractor to "build" a system capable of performing to the specifications outlined in this document. ISU reserves the right to choose which bid, or combination of bids, best suits the research needs of the end-user of this equipment.

1.7 Statement of Current Manufacture In submitting this response, the Contractor warrants that the items offered are new and represent a custom-manufactured design assembled with components that represent the most recent models currently being sold, unless demo or used equipment is offered as an alternate, and is clearly identified as such, per Section 1.3.

1.8 Site Inspection If the location or environmental conditions are important to the successful operation of the equipment offered, through Purchasing department's coordination, the Contractor will perform a site inspection to determine the suitability of proposed instrument's location and will provide in the offer any equipment or supplies necessary to insure proper operation or inform ISU of any modifications to the space necessary to insure proper installation and operation.

1.9 Valid Offers Any offers, which materially affect your proposal, are to be incorporated into your bid response and shall be addressed to the ISU Purchasing Department. Offers that are not included in writing with your proposal will not be considered. Faculty and staff, who are members of departments other than the University's Purchasing Department, are not authorized to negotiate price or alternate goods or services with regard to this request for proposal. To assist ISU in evaluating your offer, to the most reasonable extent possible, provide pricing for all components, sub-assemblies and options as individual line items.

1.10 Parties to the Contract Contractors must identify all parties who will be involved with performance of the contract. By submitting a proposal, the Contractor warrants that all parties to the contract have received a copy of this RFP and that the Contractors' response is acceptable to these parties.

1.11 Contractor Responsibilities Each Company, by submitting a proposal, acknowledges its representative has:

(a) Read and completely understood the proposed Contract Documents contained in this RFP. The Contract Documents shall consist of this RFP (Proposal Information and Instructions, Terms and Conditions of the Contract, Scope of Work, Proposal Content, Form of Proposal, and all attachments); any subsequent Addenda issued by ISU, Contractors response to this RFP, and any agreement that results from this RFP.

(b) Based their proposal upon the requirements described in the proposed Contract Documents.

1.12 Inquiries

(a) Contractor should direct any inquiries concerning this RFP to the University Representative. Contractor may not communicate about the subject of the RFP with any other University employee without the permission of the University Representative.

(b) Oral statements made by the University Representative or other University employees interpreting, correcting, revising or amending the RFP documents shall not be deemed part of the RFP documents and are not binding. The University Representative shall issue any interpretations, corrections, revisions, and amendments in the form of written addenda, which will be sent to all known recipients of the RFP documents. Except for addenda modifying the proposal due date or canceling the RFP, such addenda shall be issued so as to be received at least five (5) calendar days prior to the time set for receipt of proposals. All addenda so issued shall become part of the RFP documents and shall be acknowledged in the Acceptance Form. University reserves the right to issue an addenda in a shorter time frame if in the best interest of University.

1.13 Proposal Submission

(a) Contractor must read the RFP documents in their entirety and comply with the requirements of the RFP documents. Contractor must promptly notify the University Representative of any ambiguity, inconsistency or error that Contractor discovers in the RFP documents. University may reject proposals that fail to comply with the requirements of the RFP documents.

(b) Contractor must identify on the Acceptance Form all parties who will be involved with performance of the Contract. By submitting the Proposal, Contractor warrants that all such parties have received a copy of the RFP documents and that the Proposal is acceptable to these parties.

(c) Contractor must clearly state in the Exceptions Form any exceptions to or deviations from the RFP documents. Exceptions taken to the RFP documents may cause the Proposal to be rejected at the sole discretion of University. Any terms in the RFP documents to which Contractor does not take exception on the Exception Form shall be binding and any subsequent objections to those terms shall have no effect.

(d) A representative of Contractor who is authorized to agree to the terms in the RFP documents and to offer the pricing and make the representations about Contractor's products and services in the Proposal must sign the Proposal.

(e) Contractor is responsible for any costs incurred in the preparation and submission of the Proposal and any travel and personnel expenses associated with its on-site presentations or demonstrations or other trips related to the RFP. ISU has no responsibility for such costs or expenses even if ISU should elect not to make an award.

1.14 Withdrawal and Resubmission of Proposals

(a) Prior to the date and time designated for receipt of proposals, Contractor may withdraw a Proposal only by submitting written notice to the University Representative. Such notice must be received by the University Representative prior to the designated date and time for receipt of proposals.

(b) Contractor may resubmit a withdrawn Proposal up to the time designated for receipt of proposals provided that the resubmitted Proposal complies with the RFP documents.

(c) Contractor may not withdraw its Proposal for a period of ninety (90) calendar days after the time designated for receipt of proposals unless the Proposal contains an obvious and documented error for which it would be a manifest injustice to require the Contractor to perform pursuant to such terms.

1.15 Acceptance of Proposals and Award of Contract

(a) The RFP does not commit University to award a Contract. If University elects to award a Contract, it will do so based on the criteria set forth in the RFP documents. University is not required to purchase the lowest priced goods or inferior or substandard goods. University may make multiple awards if University determines it is in its best interest to do so.

(b) University reserves the right to accept or reject any or all proposals.

(c) University may request from Contractor additional documents or Proposal clarifications after the due date and time for proposal submission. University may also request Contractor to make an on-site presentation/demonstration. University may reject the Proposal if Contractor fails to provide the additional documents or clarifications or participate in the on-site presentation/demonstration.

(d) University may waive any irregularities, technicalities, or informalities in proposals if such waiver does not substantially change the offer or provide a competitive advantage to any contractor. University may accept deviations from the specifications in the RFP documents if through information submitted or demonstrations University determines that the offered product or service is substantially compliant and would be in University's best interest.

(e) University may investigate as it deems necessary the ability of Contractor to provide the expected goods or services. University may reject the Proposal if the evidence submitted by, or investigation of, Contractor fails to satisfy the University, in its sole opinion, that Contractor is properly qualified to carry out the obligations specified in the RFP documents.

(f) University will resolve tie proposals that are equal in all respects and tied in price by drawing lots. Whenever practical, the drawing will be held in the presence of the contractors who are tied in price. However, if this is not possible, the drawing will be made in front of at least three (3) persons and said drawing documented.

(g) Iowa Administrative Code §681-8.1(a) requires University to give a preference to Iowa products and suppliers when, in University's professional judgment, Iowa products can be obtained at equal or less cost and are of equal quality to those products obtainable from out-of-state suppliers. In addition, Iowa Code §73.2 requires all requests for proposals to contain the following language: "By virtue of statutory authority, a preference will be given to products and provisions grown and coal produced within the State of Iowa."

1.16 Formation of Contract If University elects to award a Contract, it will take one of the following actions in order to form a Contract between University and selected contractor(s):

(a) Accept a proposal, as written, by issuing a written Notice of Award to selected contractor(s) that incorporates the RFP documents by reference and accepts all or selected portions of the selected contractor's proposal. The Notice of Award will be in the form of an ISU-issued Purchase Order and/or contractual agreement which must be signed by an authorized representative of the University and the selected contractor(s). Contractor(s) shall be given twenty (20) days to sign such Contract. Delays in finalizing by a contractor may be viewed as lack of interest by the contractor in servicing the Contract and would be grounds for rejecting that contractor's proposal.

(b) Enter into negotiations with one or more contractors in an effort to reach a mutually satisfactory Contract that will be executed by both the University and contractor and that will be based on the RFP documents, the proposal submitted by selected contractor, any clarification(s) requested by the University and submitted by contractor, except as amended by mutual agreement through the associated negotiations. These negotiations will not include any changes to the pricing structure submitted in the proposal, unless the negotiations change the requirements. Should University and the selected contractor be unable to negotiate a mutually acceptable contract within thirty (30) days of the University initiating negotiations, University shall have the right to reject the selected contractor's proposal and enter into negotiations with another contractor, without penalty or any liability to University.

(c) Because the University may use the alternative described in (a) above, Contractor shall include in its Proposal all requirements, terms or conditions it may have, and shall not assume that an opportunity will exist to add such matters after the Proposal has been submitted.

1.17 Disposition and Disclosure of Proposals

(a) Once opened, the Proposal becomes the property of University and will not be returned to the Contractor.

(b) Until the date of an award of this RFP, the Proposal and any other related documents provided by Contractor, including but not limited to, attachments, appendices, and exhibits, shall be treated as confidential to the extent required and permitted under State of Iowa law.

(c) Iowa Administrative Code §681-8.1(h) requires University to release, if requested, the name of the successful Contractor and all other Contractors and the amounts bid. In addition, University is subject to the Iowa Open Records Law (Iowa Code Chapter 22). Contractor is encouraged to familiarize itself with the Iowa Open Records Law prior to submitting its Proposal. If Contractor believes that portions of the Proposal or other submitted documents (other than its name and pricing) are confidential under the Iowa Open Records Law, Contractor shall clearly identify those portions in the space provided on the Acceptance Form and indicate the specific provision in the Iowa Open Records Law upon which Contractor relies in determining the identified portion is confidential. Proposals marked entirely confidential or proprietary may be rejected.

(d) If University receives a request for a portion of the Proposal or other documents that Contractor has identified as confidential, University shall notify Contractor (unless legally prohibited from doing so) and Contractor shall, at its sole expense and in a timely manner, appear before an administrative or judicial authority to obtain an order restraining its release. If Contractor fails to do so, University may release the portions of the Proposal or other documents that Contractor has identified as confidential.

(e) Failure to properly identify items as confidential on the Acceptance Form and appropriately cite the specific provisions of the Open Records Act relied upon shall relieve University from any responsibility to notify Contractor of a request for those items and from any liability should such items be released.

1.18 Conflict of Interest In order to comply with federal and state laws and regulations, a Contractor who is a "Conflict of Interest Contractor" must have approval from the University Representative prior to submitting its Proposal on this RFP. A Contractor is a "Conflict of Interest Contractor" if it is any of the following:

(a) A paid employee (whether full-time, part-time, hourly, temporary, or student--including a graduate student on assistantship) of University, any other Board of Regents institution or the Board of Regents Office

(b) A member of the Board of Regents, State of Iowa

(c) An entity in which any of the above referred persons is a partner or sole proprietor

(d) An employee of another State of Iowa agency (Iowa Department of Transportation, Department of Administrative Services, Department of Human Services, etc.)

(e) Any State of Iowa officials, members of the general assembly, or legislative employees

1.19 Independent Price Determination Contractor certifies that in connection with its Proposal:

(a) Any prices or hourly rates in the Proposal have been arrived at independently, without consultation, communication, or agreement with any competitor for the purpose of restricting competition.

(b) Any prices or hourly rates which have been provided in this Proposal have not been knowingly disclosed by Contractor, directly or indirectly, to any competitor.

(c) No attempt has been made by Contractor to induce any other person or entity to submit or not to submit a proposal for the purpose of restricting competition.

1.20 Gratuities The laws of the State of Iowa prohibit a person who is seeking to enter into a contract with University from, directly or indirectly, offering or making a gift to University employee. See Iowa Code §68B.22 for additional information.

1.21 Advertising In submitting this offer, the Contractor agrees not to use the results as a part of any commercial advertising without prior approval of ISU.

1.22 Vendor Registration Contractors ***must*** have a current vendor registration on file prior to receiving an award resulting from an RFP. Visit the vendor registration website (shown below) for instructions on the vendor registration process.

https://accessplus.iastate.edu/NonAuth/PD10/PD155Vendor.jsp

Section II – Scope of Work/Specifications

Iowa State University (ISU) requests bids to provide and install a cyclic/repeated load triaxial testing device (CYCELL DEVICE) for the Civil, Construction and Environmental Engineering (CCCE) Department per the specifications.

2.1 **Description and Research Application** This custom designed and manufactured CYCELL DEVICE will be used to:

- 2.1.1 evaluate the cyclic resistance and anisotropic and stress-dependent behavior of soils/geomaterials (with particular emphasis on fine-grained and coarse-grained);
- 2.1.2 measure and apply different load sequences in all directions;
- 2.1.3 measure and apply displacements/deformations of prismatic/cubic-shaped samples of various sizes in all three directions;
- 2.1.4 measure and apply pore pressures in all three directions (x, y, z) under varied specimen conditions (e.g., undrained) under various load histories (including cyclic);
- 2.1.5 independently cycle/apply stresses in all three directions (x, y, z)[1] at different orientations of the principal stresses with controlled variations in the magnitudes of the three principle stresses and the direction of the major principle stresses;
- 2.1.6 reverse principal loading direction on the same specimen;
- 2.1.7 control the temperature inside of the cell chamber encasing the specimen under test;
- 2.1.8 conduct shear wave tests using integrated measurement elements (e.g., simulating shear waves sent by moving vehicles in the field).

CYCELL will be an innovative research tool for testing methods beyond current standards. The CYCELL device will be able to simulate actual field stress and climate conditions in the laboratory and study the effects of principle stress rotation due to observed moving wheel load field measurements that involve a change in total shear stress direction. It will use a confining fluid/air interface to minimize compressibility effects when conducting tests in which the stress in X and Y directions must be cycled. This will be useful for investigating anisotropic effects and the response to loading in which a 90° rotation of principal stress is important. Samples will be prepared in cubic/prismatic and optional cylindrical shapes. Cubic samples will be prepared in 2 in. x 2 in. x 2 in., 4 in. x 4 in. x 4 in. and 6 in. x 6 in. x 6 in. configurations for testing in CYCELL. Other prismatic sample configurations of interest for testing using CYCELL include 2 in. x 2 in. x 4 in., 4 in. x 4 in. x 8 in. and 6 in. x 6 in. x 12 in. CYCELL will also be able to accommodate 4 in. x 8 in. and 6 in. x 12 in. cylindrical sample configurations.

[1]Note: as described later in these specifications, Contractor may also provide a quote for the supply of a CYCELL device with ability to independently load the specimens along two axes with loading along the third axis provided via precisely controlled and measured cell confinement pressure. However, a straightforward upgrade pathway to integrating loading in the third axis by the same means (e.g., servohydraulic or electromechanical actuator) as provided for the other two axes must also be available for the system.

Prior to award of any contract, ISU reserves the right to request demonstrated capability of the successful Contractor to design and manufacture the proposed system with performance and function acceptable to the University.

2.2 **Submittals**

- 2.2.1 As described at Section III.3.6, Contractor will furnish Supplement 1, a detailed description of how their proposed CYCELL DEVICE meets or exceeds the requirements and specifications stated herein.
- 2.2.2 Before execution of work, Contractor will furnish information to evidence full compliance with contract requirements for proposed items. These submittals will include SHOP DRAWINGS and PRODUCT DATA described further below.
- 2.2.3 Shop Drawings:
  - a. Electronic CAD files (in Autodesk Inventor/AutoCAD or SolidWorks file format) along with three complete hardcopy sets of drawings scaled with dimensioned layout in plan and section views

showing the details of the CYCELL DEVICE including:

i. Plan view of CYCELL apparatus layout in the ISU Town Engineering lab that will house the device. (Note: ISU will provide a CAD file of the lab space for use with this layout drawing.)
ii. Elevation Views;
iii. CYCELL DEVICE component hardware details;
iv. Auxiliary views of device components (cell, panels, data acquisition and sensor components, etc.)
v. Electrical wiring plans detailing all CYCELL electrical circuits, powered devices, sensor and data acquisition components and wiring;
vi. Facility piping, instrumentation and control diagrams.

b. If any of the shop drawings are proprietary information, they need to be recorded on the Acceptance Form, Section IV as Proprietary Information.

c. In the event field modifications are necessary during installation, drawings shall be revised to include all corrections made prior to and during the final inspection of the device. Corrected drawings shall be delivered to the Owner within thirty (30) days of final acceptance.

2.2.4 Product Data

a. owner's manuals for CYCELL Device components and selected options

b. CYCELL Device manual with sections including: hazard statements, detailed specimen-under-test preparations, detailed device operation procedures, device schematics, device software and data acquisition system operation, device calibration and controls loop tuning, device troubleshooting and service, detailed device performance specifications to include resolution, accuracy and error statements for system level performance, individual sensors, individual actuators (including frequency response), each control loop, and data acquisition hardware.

2.3 **Specifications** Systems offered must meet the "base" specifications stated below and also offer the included options through modular upgrade pathways. Contractor will present pricing for these base and optional capabilities in the Form of Submittal, Section III.

2.3.1 System Requirements:

A. Capable of performing above-described research applications along with computer-controlled conventional coarse and fine grained material static and dynamic triaxial tests, resilient and dynamic modulus modulus testing, permanent deformation testing, and permeability testing.

B. Dynamic Testing simultaneously in each orthogonal direction with respect to the specimen under test (from ~0 Hz to an upper end dynamic frequency of about 10 Hz is preferred) with controllability to at least 0.1% of the feedback sensor full scale range. Use of two servo-hydraulic or electromechanical actuators for each axis. Master/slave control of paired actuators on each axis is acceptable with software algorithms necessary to keep the specimen-under-test centrally located within the device confining cell. Contractor will indicate maximum achievable total deformation rate per second for each axis under load with the quoted system and options. Base system will provide actuators for actuation along two axes and computer-control of air confining pressure along third axis. Actuator dynamic load capacity will be 50 kN minimum in each direction. Specimen confinement cell will have adapter ports already in place for optional addition of actuators along third axis. All three axes will have means for physically enabling/disabling actuator and platens and in software for that axis to allow for use of the desired number of paired actuators as desired for a given test. Individual actuator control will also be made possible with the system for application of independent axial loads (indicate maximum frequencies achievable in this mode of operation). System/actuator-produced noise must not exceed 75 dB. Actuators and their electrical/hydraulic supply means will include safety interlocks, automatic shut-off protection for electrical/fluid level/thermal conditions outside of

normal operational ranges; and manual controls and indicators for diagnostic purposes (e.g., low/high/off hydraulic pressure application, oil temperature, pressure and level). Actuator upgrade options include:

a. Option 1: 80 kN dynamic load range for actuators along base-supplied two axes. Note: indicate additional increment to base system pricing if this option is selected in lieu of base system actuators.
b. Option 2a: addition of actuators meeting above specifications along third axis.
c. Option 2b: 80 kN dynamic load range for actuators along third axis.
d. Option 3: If supplied actuator will be hydraulic, a quiet hydraulic pump to reduce system/actuator noise to 60 dB or below. Note: indicate additional increment to base system pricing if this option is selected in lieu of base system hydraulic power supply.
e. Option 4a: If supplied actuator will be hydraulic, a chiller package for cooling hydraulic fluid for supplied hydraulic pump
f. Option 4b: If supplied actuator will be hydraulic, an air-cooled hydraulic oil heat exchanger package for supplied hydraulic pump

C. Confinement cell with means for supporting and adapting actuators directly to the cell with negligible compliance effects on specimen-under-test mounted within the confinement cell. Means for computer control of the temperature to at least +/- 0.2 deg C within the range of -15 deg C to +60 deg C within the confinement cell. Maximum specimen size of 6 in. x 6 in. x 12 in. for testing within cell. Minimum of 12 sealed, electrical feed-through connectors for adapting internal instrumentation such as load cells, strain gaging, displacement sensors, ultrasonic velocity sensor elements, and temperature sensors to data acquisition hardware external to the cell.

a. Option 5: low end of temperature control range extended to -30 deg C (Note: inclusion of ports for liquid nitrogen use to extend the range is acceptable.)
b. Option 6: system adaptation to allow for water and/or water-antifreeze solution for application of cell confining pressure. This should include water-submersible load and displacement sensors and any other upgrades required to avoid deterioration of system components that may come into contact with the confining fluid.

D. Provisions for safely and routinely lifting specimen confinement cell cover with actuator assembly off confinement cell base and moving out of the way to facilitate specimen preparation and system maintenance. Provisions for accurate placement of cell cover over specimen-under-test once specimen is prepared.

2.3.2 Specimen preparations:

A. Base system includes specimen forming mold for materials.

B. Contractor will describe process for specimen molding and loading into the cell. Vacuum mold is supplied to expand the membrane sealed to the bottom platen.

C. System supplied with loading platens for base cubic specimen size of 6 in. x 6 in. x 6 in. and a minimum set of 20 membranes for this size.

a. Option 7: For two axes loading scenarios, v-notch platens designed similarly to the friction reducing platens employed by Yin et al., 2011 (Yin, J.H., Zhou, W.H., Kumruzzaman, M., and Cheng, C.M., “A Rigid-Flexible Boundary True Triaxial Apparatus for Testing Soils in a Three-Dimensional Stress State, *Geotechnical Testing Journal*, Vol. 34, No. 3, 2011).

b. Option 8: loading platens for prismatic specimen size of 6 in. x 6 in. x 12 in., and a minimum set of 20 membranes for this size
c. Option 9a: loading platens for cubic specimen size of 4 in. x 4 in. x 4 in., and a minimum set of 20 membranes for this size
d. Option 9b: loading platens for prismatic specimen size of 4 in. x 4 in. x 8 in., and a minimum set of 20 membranes for this size
e. Option 10a.: loading platens for cubic specimen size of 2 in. x 2 in. x 2 in., and a minimum set of 20 membranes for this size
f. Option 10b: loading platens for prismatic specimen size of 2 in. x 2 in. x 4 in., and a minimum set of 20 membranes for this size
g. Option 11a: loading platens for cylindrical specimen size of 4 in. diameter and 8 in. height, and a minimum set of 20 membranes for this size
h. Option 11b: loading platens for cylindrical specimen size of 6 in. diameter and 12 in. height, and a minimum set of 20 membranes for this size Option 12: top platen swivel for standard triaxial testing to allow the specimen to strain in a non-uniform manner
i. Option 13: asphalt platens, LVDTs, and LVDT holders for testing of standard-sized asphalt dynamic modulus specimens.

D. All base-supplied and optional loading platens will be rigid such that strains applied to specimen-under-test will be uniform and include an ability to quickly change out the platen with another size, type or replacement platen and the ability to change out sensors used with and/or embedded in the platen. Appropriate-sized sensor holders/mounts for the sensor package(s) supplied with the CYCELL DEVICE will be included with each supplied set of platens.

2.3.3 Pressure Control and Pressure Sensors:

A. Provision of means for manual and computer control and switching between the two control modes for control and automation of: cell confining pressure, back pressure, specimen drainage and specimen saturation, consolidation and shear loading stages.
a. Option 14a: de-airing tank for provision of de-aired pore water and/or cell confining fluid
b. Option 14b: additional pore pressure port

B. Minimum acceptable confining pressure range of 300 kPa controllable to about 0.5 Hz for balancing pore pressures and specimen loading along the third axis.

C. cell and back pressure transducers with accuracy of at least 0.25%, and range of 1 MPa or similar

D. Minimum of 5 pressure ports for confining and pore pressure measurement

E. Chamber cell with connections and tubing for cell pressure, back pressure, and pore pressure comprised of the stiffest practical tubing to reduce effects on accuracy associated with tubing flexibility.

F. Pressure control means necessary to ensure no significant fluctuation of cell pressure during dynamic testing where cell pressure is controlled to a constant value.

2.3.4 Displacement, Strain, Load, and Ultrasonic Velocity Sensor Requirements:

A. internal load cells with preferred accuracy of at least 0.1% of scale for base system load axes
a. Option 15: internal load cells with preferred accuracy of at least 0.1% of scale for added load axis if Option 2a. or 2b. is elected for purchase.

B. Base system will include internal (with respect to the cell) sensor elements capable of making specimen deformation measurements along each axis of loading with a resolution and accuracy of at least 0.0001 in. Mounting means for these sensor elements will ensure that any compliance within the specimen loading platens has a negligible effect on deformation measurements.
   a. Option 16: deformation measurement means with a resolution and accuracy of at least 0.0001 in. that allow for direct attachment/coupling to specimen-under-test face(s) subjected to confining pressure loading.

C. Base displacement/strain/load/pressure sensing package covering the full expected actuator displacement, load and specimen deformation ranges of the base CYCELL DEVICE.
   a. Option 17: lower range displacement/strain/load sensors appropriate for the smaller, optional specimen sizes that can be configured for testing with the CYCELL DEVICE.

D. Option 18: add-on cost to base system platens or any of Options 8a-11b selected for provision of embedded crystal elements for ultrasonic velocity measurements.

E. Option 19: add-on cost to base system platens or any of Options 8a-11b selected for provision of bender elements for ultrasonic velocity measurements.

2.3.5 Data Acquisition (DAQ)/Control requirements:

A. Sufficient channels to adapt 6 servo-controlled actuators and a minimum of 17 universal sensor/actuation element inputs (for connection, signal conditioning and/or pass through of signals from load cells, AC and DC LVDTs, pressure sensors, thermocouples, RTDs, thermistors, automated valves, and other analog input and output signals).

B. Ability to provide closed-loop control at rates to 10 kHz.

C. 24 bit resolution with adjustable offset and gain for sensor components and anti-aliasing filter.

D. Minimum 18-bit resolution for outputs to drive actuator servo components with null, gain, dither and current limit adjustments and an adaptive control function for automatic adjustment of control gain values based on specimen stiffness.

E. USB, WiFi, and TCP/IP enabled communications between data acquisition and control hardware and system computer.

F. Provide emergency stop switch.

G. Provide all cabling and connectors required for interface of sensors, actuators, and other system automation components to the data acquisition and control hardware.

2.3.6 Computer and Software requirements:

A. Windows 10 computer for interface to CYCELL DEVICE hardware and controls.

B. 32/64 bit software for CYCELL DEVICE configuration and data acquisition and control operations.

C. Built in standard waveforms and other control profiles for conduct of standard testing (e.g., triaxial, resilient modulus, dynamic modulus) and test stages (e.g., saturation, consolidation, static loading, dynamic loading) and general waveform application (e.g, ramp, haversine, triangular, square, sinusoidal, arbitrary, frequency and amplitude sweep).

D. Unlimited ability to prepare and save custom-defined control waveform profiles for application of varied sweep frequencies and amplitudes within the full range of system capabilities.

E. Ability to select/adapt any interfaced strain, displacement or load sensor interfaced to the specimen-under-test and calculated parameter (e.g., stress) from the sensor signal for use as the actuator feedback signal for test control and ability to transfer between control modes during testing in a manner that minimizes effects on specimen-under test.

F. Ability to employ closed- and open-loop control to specimen-under test.

G. Ability to display control loop feedback and command signals, to tune DEVICE control loops and to adjust loop parameters.

H. Ability to adapt test software, sensors, etc. to specific specimen size selected for testing in the CYCELL DEVICE.

I. Ability to independently control one, two or three axes of load, displacement, strain or stress simultaneously during specimen testing.

J. Reporting of modular ratios for resilient modulus, shear strength, angle of friction, cohesion, and permanent deformation parameters.

K. Ability to remotely monitor a test.

2.3.7 Option 20: Separate cell assembly or modified base-supplied cell assembly and ancillary components (e.g., chiller, and prescribed number of platen-mounted temperature sensors) for conducting frost heave and thaw weakening tests with the CYCELL DEVICE in accordance with ASTM 5918.

2.3.8 Option 21: High strength rubber or plastic calibration specimen for evaluation of CYCELL DEVICE compliance and loading/deformation system measurement accuracy.

2.3.9 Option 22: Provision of view window in confining cell with sufficient sight lines to see extent of entire specimen-under test.

2.3.10 Device Packaging:

A. Packaging of CYCELL DEVICE and/or its constituent components shall conform to the following requirements:
   a. Weight of any package shall not exceed 2000 lbs.
   b. Outside dimensions of any package shall not exceed in any dimension 72 in. high x 60 in. wide x 72 in. deep.

2.3.11 Installation and Training:

A. System is offered complete with all parts installed by a fully qualified field service engineer with comprehensive prior experience installing similar equipment.

B. Provide minimum three 30 hours of on-site operator training (tuition-free) within one week of the installation of the CYCELL device to at least four ISU representatives chosen by the device purchasers. Training will include testing on Contractor-provided device calibration specimen and at least two specimen types provided by ISU representatives.

2.3.12 CYCELL DEVICE Performance: Performance of the CYCELL DEVICE will be evaluated per Evaluation Criteria and Proposal Process on page 1 and 2. Performance evaluation will also include: evaluation of adherence to specifications of sensor elements, data acquisition components, actuator elements, and control loops; uniformity of temperature in cell; comprehensive testing of system software to ensure that incorrect calculations or coding errors are not present; and ability of system to replicate property measurements for supplied polymeric calibration specimen and a series of well-characterized soil specimens including specimens built with Ottowa sand and kaolin.

2.3.13 Warranty and Support

A. Minimum acceptable system warranty period will be one (1) year.

B. Minimum one (1) year free technical support

Section III – Submittal Requirements

Complete the following information and include supplemental items as described below in your proposal response.

Do not respond with "see attached", this form must be filled out or your offer may be rejected as incomplete.

3.1 PROPOSAL PRICING: Contractor agrees to provide the following equipment (shipping and installation costs included) as described in the proposal and in the pricing below.

CYCLIC/REPEATED LOAD TRIAXIAL TESTING (CYCELL) DEVICE:

Option No. (with reference to Section II)	**Price, US dollars**	**Estimated Delivery Date**
Base CYCELL Device (includes two axes of loading with one axis of confining pressure and all other base attributes described in the proposal)		
Option 1: 80 kN dynamic load range for actuators along base-supplied two axes. Note: indicate additional increment to base system pricing if this option is selected in lieu of base system actuators.		
Option 2a: addition of actuators meeting above specifications along third axis.		
Option 2b: 80 kN dynamic load range for actuators along third axis.		
Option 3: If supplied actuator will be hydraulic, a quiet hydraulic pump to reduce system/actuator noise to 60 dB or below. Note: indicate additional increment to base system pricing if this option is selected in lieu of base system hydraulic power supply.		
Option 4a: If supplied actuator will be hydraulic, a chiller package for cooling hydraulic fluid for supplied hydraulic pump		
Option 4b: If supplied actuator will be hydraulic, an air-cooled hydraulic oil heat exchanger package for supplied hydraulic pump		
Option 5: low end of temperature control range extended to -30 deg C (Note: inclusion of ports for liquid nitrogen use to extend the range is acceptable.)		
Option 6: system adaptation to allow for water and/or water-antifreeze solution for application of cell confining pressure. This should include water-submersible load and displacement sensors and any other upgrades required to avoid deterioration of system components that may come into contact with the confining fluid.		

Option 7: For two axes loading scenarios, v-notch platens designed similarly to the friction reducing platens employed by Yin et al., 2011		
Option 8: loading platens for prismatic specimen size of 6 in. x 6 in. x 12 in. and a minimum set of 20 membranes for this size		
Option 9a: loading platens for cubic specimen size of 4 in. x 4 in. x 4 in., and a minimum set of 20 membranes for this size		
Option 9b: loading platens for prismatic specimen size of 4 in. x 4 in. x 8 in., and a minimum set of 20 membranes for this size		
Option 10a.: loading platens for cubic specimen size of 2 in. x 2 in. x 2 in., and a minimum set of 20 membranes for this size		
Option 10b: loading platens for prismatic specimen size of 2 in. x 2 in. x 4 in., and a minimum set of 20 membranes for this size		
Option 11a: loading platens for cylindrical specimen size of 4 in. diameter and 8 in. height, and a minimum set of 20 membranes for this size		
Option 11b: loading platens for cylindrical specimen size of 6 in. diameter and 12 in. height, and a minimum set of 20 membranes for this size		
Option 12: top platen swivel for standard triaxial testing to allow the specimen to strain in a non-uniform manner		
Option 13: asphalt platens, LVDTs, and LVDT holders for testing of standard-sized asphalt dynamic modulus specimens.		
Option 14a: de-airing tank for provision of de-aired pore water and/or cell confining fluid		
Option 14b: additional pore pressure port		
Option 15: internal load cells with preferred accuracy of at least 0.1% of scale for added load axis if Option 2a. or 2b. is elected for purchase		
Option 16: deformation measurement means with a resolution and accuracy of at least 0.0001 in. that allow for direct attachment/coupling to specimen-under-test face(s) subjected to confining pressure loading		
Option 17: lower range displacement/strain/load sensors appropriate for the smaller, optional specimen sizes that can be configured for testing with the CYCELL DEVICE		

Option 18: add-on cost to base system platens or any of Options 8a-11b selected for provision of embedded crystal elements for ultrasonic velocity measurements		
Option 19: add-on cost to base system platens or any of Options 8a-11b selected for provision of bender elements for ultrasonic velocity measurements		
Option 20: Separate cell assembly or modified base-supplied cell assembly and ancillary components (e.g., chiller, and prescribed number of platen-mounted temperature sensors) for conducting frost heave and thaw weakening tests with the CYCELL DEVICE in accordance with ASTM 5918.		
Option 21: High strength rubber or plastic calibration specimen for evaluation of CYCELL DEVICE compliance and loading/deformation system measurement accuracy.		
Option 22: Provision of view window in confining cell with sufficient sight lines to see extent of entire specimen-under test.		

3.2 Export Control Classification Number (ECCN) If any item(s) offered is(are) restricted for export to any country, identify the item and provide the Department of Commerce Export Control Classification Number (ECCN)

_____

3.3 Delivery Date for Base CYCELL DEVICE:_____

3.4 References All offers shall include a list of users and three (3) references, specifically, three customers currently using a comparable Contractor's system to the type being offered. (Complete Attachment B.) At a minimum, the name of a contact person and a telephone number shall be provided. ISU may solicit references independently for equipment procurements where a specific application is deemed important. **Attachment A**

3.5 Sustainability Information Complete Attachment C "Sustainability Information." **Attachment B**

3.6 Requirements and Specifications Provide a detailed response to each of the requirements and specifications provided in Section II addressing the specifications/features your system offers and whether they meet the ISU required requirement and specifications. **Include as Supplement 1.**

3.7 Environmental Requirements List all environmental requirements essential to the operation of the equipment offered. These should include, but are not limited to: temperature range, relative humidity, lighting requirements, etc. **Include as Supplement 2.**

3.8 Utility Requirements Contractors must specify all utility requirements essential to the operation of the equipment offered. These shall include, but are not limited to: electricity (Voltage, Wattage, Amperage, etc.), dry nitrogen purge gas (and necessary pressure regulation to achieve and maintain high instrument performance), compressed air, water, natural gas, etc. **Include as Supplement 3.**

3.9 Physical Dimensions

- Indicate the physical dimensions and weight of the largest piece of hardware offered and/or the minimum size doorway which will accommodate entrance.
- Specify any floor load requirements.
- Specify the minimum working area required for efficient use of the equipment offered.

Include as Supplement 4.

3.10 Support and Service Include details for the following:

- Technical and/or customer support available for administering your systems
- Response times for service requests and queries
- Current service rates for travel, labor and per diem
- Location of the field service representative(s) responsible for this account
- Specify the parts depot location from which orders for Iowa State University would be shipped
- State the current price for a one (1) year service contract

Include as Supplement 5.

3.11 Company Profile Provide a one-page summary describing Company that includes a brief company history, associations with other accounts of similar size to ISU and Company's mission statement. **Include as Supplement 6.**

3.12 Literature All offers must include complete literature describing your offer and providing all relevant technical specifications/performances for all components offered. Any offer which does not include literature as requested may be considered non-compliant based on an inability to properly evaluate your offer. This is required for EVERY piece of equipment offered. **Include as Supplement 7.**

3.13 Payment Terms

Be certain to state terms of payment. Failure to indicate Contractor terms will mean that, if Contractor submittal is accepted, then Iowa State University will apply a five percent (5%) discount for payments made within 15 days of receipt of Contractor invoice in Procurement Services.

Section IV – Acceptance Form

The undersigned Contractor, in response to this RFP after carefully reviewing all instructions, scope of work/specifications, and terms and conditions contained therein, submits this proposal as an offer to enter into a mutually acceptable contractual agreement with the University. If this proposal is accepted by the University, the Contractor agrees to provide goods and/or furnish services in accordance with this RFP.

The undersigned acknowledges receipt of the following Addenda if applicable, which are a part of the contract documents:

_____ _____ _____ _____ _____ _____

All issued Addenda must include an authorized signature and be returned with your RFP response.

Proprietary Information: The undersigned notes the following sections of this proposal represent trade secrets or proprietary information. ***Note:*** Pricing information and other financial offers cannot be considered proprietary information.

_____

_____

_____

The undersigned agrees their proposal is an offer to the University that may not be withdrawn for a period of ninety (90) calendar days after the RFP due date.

The undersigned hereby certifies by signing below; **(a)** that this proposal is genuine and is not made in the interest of or on behalf of any undisclosed person, firm, or corporation; **(b)** that the undersigned has not directly or indirectly induced or solicited any other Contractor to put in a false or sham proposal; **(c)** that the undersigned has not solicited or induced any person, firm, or corporation to refrain from bidding; and **(d)** that the undersigned has not sought by collusion or kickback to obtain any advantage over any other Contractor or over the University.

Legal Business Name: _____

Official Address: _____

_____

Federal Employment Identification Number: _____

State of Iowa Contractors Number (if applicable): _____

Authorized Signature: _____

Name Printed or Typed: _____

Title: _____

Telephone Number: _____

Email _____ Date: _____

Section V – Exceptions

List any and all exceptions to this RFP in this section. Include page number, section and reason for exception.
Note: Attach additional pages if necessary.

Check one of the following:

[ ] Contractor has no exceptions to this RFP
[ ] Contractor has the following exceptions to this RFP

	Page Number	Section	Exception
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____
11.	_____	_____	_____
12.	_____	_____	_____
13.	_____	_____	_____
14.	_____	_____	_____

Section VI – Submittal Checklist

RFP responses will not be considered complete unless **all** items in the check list are provided in the order given below. Refer to Section III – Submittal Requirements for more detailed information.

- ☐ Section III, Submittal Requirements (Pages 17-20)
- ☐ Supplement 1 – Requirements and Specifications
- ☐ Supplement 2 – Environmental Requirements
- ☐ Supplement 3 – Utility Requirements
- ☐ Supplement 4 – Physical Dimensions
- ☐ Supplement 5 – Support and Service
- ☐ Supplement 6 – Company Profile
- ☐ Supplement 7 – Literature relevant to RFP
- ☐ Completed and Signed Section IV – Acceptance Form
- ☐ Completed and Signed Section V – Exceptions
- ☐ Attachment B – References
- ☐ Attachment C – Sustainability Information

Attachment A - Standard Terms & Conditions

1. Assignment This Contract (including any future amendments incorporated into the Contract) may not be assigned, transferred, sold, or subcontracted by Contractor without the prior written consent of the University. Should Contractor be purchased (in whole or in part) by another organization or should Contractor wish to assign, transfer, or subcontract the Contract to another Contractor, University shall have the right to terminate the Contract upon reasonable written notification, without penalty to University.

2. Amendments to the Contract This Contract shall not be changed, modified, altered, or amended in any respect without the written mutual consent of both parties.

3. Indemnification The Contractor shall indemnify and hold harmless the University and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from;

   (a) The material non-performance, non-compliance or breach with terms and obligations of this Contract.

   (b) Any negligent or wrongful act or omission of the Contractor or its subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity, which would otherwise exist as to any party or person.

   The Contractor's indemnification obligation shall not be limited in any way by any definition or boundary on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' compensation, disability benefits or other employee benefit acts.

4. Immunity from Liability Every person who is party to this agreement is hereby notified and agrees that the University, and its agents, successors, and assignees are immune from liability and suit for or from Contractor's activities involving third parties and arising from this Contract.

5. Severability of the Contract In the event any one or more of the provisions contained in this Contract shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision of this Contract, but this Contract shall be construed as if such invalid or unenforceable provision had never been contained. Further, in the event that any provision of this Contract shall be held to be unenforceable by virtue of its scope, but may be made enforceable by a limitation thereof, such provision shall be deemed to be amended to the minimum extent necessary to render it enforceable under the laws of the jurisdiction in which enforcement is sought.

6. Governing Law Terms and provisions of this Contract shall be construed in accordance with the laws of the State of Iowa, and any and all litigation or actions commenced in connection with this Contract resulting shall be instituted in the appropriate court(s) of the State of Iowa.

7. Use of Name or Intellectual Property Contractor shall not use the name or any intellectual property identifying the University, including, but not limited to, any of the University trademarks or logos, or the name of any employees of the University in any publicity, advertisement or endorsement or as a business reference, without the expressed prior written consent of the University.

8. Force Majeure Subsequent to acceptance by the University, neither party shall be liable for damages due to: lightning, fire, explosion, pest damage, strikes or labor disputes of third parties, floods, acts of God, war, civil

disturbances, acts of civil or military authorities or the public enemy, inability to secure raw materials, fuel or energy shortages, acts or omissions of communications carriers, unauthorized use of the products, or other causes beyond the party's reasonable control whether or not similar to the foregoing.

9. Right to Retention University may withhold from payment to Contractor, in such an amount or amounts as may be necessary to cover payments that may be earned or due for justified third party claims associated with labor, services, equipment, or materials furnished and/or product or service not provided or not remedied/cured.

10. Failure to Enforce University shall not be required to enforce any right or remedy available under the Contract; however, if University elects to waive a right or remedy under this Contract, University shall not be precluded from asserting said right or remedy thereafter.

11. Access to Contractor Records/Audits Contractor shall retain all records and documents and shall provide unlimited access, at all reasonable times and upon reasonable notice, to all accounting records and supporting documentation relating to the goods and services furnished during the term of this Contract and for a period of seven (7) years thereafter, unless required to retain for a longer period by state or federal statute. University reserves the right to audit such records and employ the Auditor of the State of Iowa or any other auditor the University deem appropriate to perform an audit of Contractor records. Should such audit disclose incorrect billings or improprieties, University reserve the right to charge Contractor for the cost of the audit and pursue appropriate reimbursement. Evidence of criminal intent will be turned over to the proper authority.

12. Code of Fair Practice Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color, religion, national origin, age, sex, pregnancy, disability, genetic information, status as a U.S. Veteran, service in the U.S. Military, sexual orientation, gender identity, associational preferences, or any other classification that deprives the person of consideration as an individual. Contractor shall take affirmative action to ensure that applicants are employed and that the employees are treated during employment without regard to their race, creed, color, religion, national origin, age, sex, pregnancy, disability, genetic information, status as a U.S. Veteran, service in the military, sexual orientation, gender identity, associational preferences, or any other classification that deprives the person of consideration as an individual except where it relates to a bona fide occupational qualification. In performance of this Contract, Contractor shall comply with provisions stipulated in Executive Order 11246, or amended by executive order 11375.

    In the event of Contractor's noncompliance with the Code of Fair Practice of this Contract or with any of the aforesaid or related regulations, this Contract may be canceled, terminated, or suspended in whole in part and Contractor may be declared ineligible for further agreements with the University. In addition, the University may take any actions or other sanctions as may be imposed or remedies invoked as provided by the Code of Iowa.

13. Gratuities The laws of the State of Iowa prohibit a person who is seeking to enter into a contract with University from, directly or indirectly, offering or making a gift to University employee. See Iowa Code §68B.22 for additional information.

14. Termination – Non-appropriation of Funds Notwithstanding any other provisions of this Contract, if funds anticipated for the continued fulfillment of this Contract are at any time not forthcoming or insufficient, either through the failure of the Iowa Legislature or the Federal government to provide funds or alteration of the program under which funds were provided, then the University shall have the right to terminate the Contract without penalty by giving written notice documenting lack of funding.

15. Termination This contract may be terminated for any of the following;

(a) If Contractor is adjudged bankrupt or makes a general assignment for the benefit of creditors or if a receiver is appointed on account of Contractor's insolvency, then University may, after giving Contractor written notice, terminate this Contract, without penalty to the University.

(b) If the Contractor has failed to deliver goods or services, has delivered non-conforming goods or services or is otherwise in material breach of this Contract, University shall provide a right to cure notice ("Cure Notice"). University may, within their sole discretion, accept or reject any or all proposed cure actions. If after such notice the Contractor continues to be in default, University may, within their sole discretion, terminate the Contract without any further obligation or penalty and procure substitute services from another source and charge the difference between the contracted price and the market price to the Contractor.

(c) With the mutual agreement of both parties, the Contract may be terminated on an agreed date prior to the end of the contract period without penalty to either party.

(d) University may terminate this Contract without penalty for any reason by giving a 30-calendar day notice.

16. Taxes University is exempt from Federal Excise Taxes, and no payment will be made for any taxes levied on Contractor's employees' wages. University is exempt from State and Local Sales and Use Taxes on the services. Tax Exemption Certificates will be furnished upon request. Contractor certifies it is either;

(a) registered with the Iowa Department of Revenue, collects, and remits Iowa sales and use taxes as required by the Code of Iowa Chapter 423; or

(b) not a "retailer" or a "retailer maintaining a place of business in this state" as those terms are defined in the Code of Iowa §§ 423.1(47) & (48). The Contractor also acknowledges that the University may declare the Contract void if the above certification is false. The Contractor also understands that fraudulent certification may result in the University or its representative filing for damages for breach of contract.

17. Subcontractors Contractor shall be responsible for the acts and performance of any subcontractor that Contractor may engage to fulfill any of its obligations set forth in the Contract. Contractor shall be responsible for payment to all subcontractors and Contractors.

(a) All services provided for Contractor by a subcontractor shall be pursuant to an appropriate agreement between Contractor and subcontractor. The Contract shall contain provisions that preserve and protect the rights of the University and require services be performed in accordance with the requirements of the Contract.

(b) Contractor is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the University. Any subcontractor(s) must have been identified in the Contractor's proposal in response to this RFP or be approved in writing by the University prior to the subcontractor(s) starting work relating to the Contract.

18. Targeted Small Business Contractor is encouraged to use certified Iowa Targeted Small Businesses in the performance of this Contract. A report may be requested at the completion of the Contract indicating the extent of Targeted Small Businesses participation.

19. Contractor's Responsibility Contractor shall obtain all necessary permits, licenses and other government approvals necessary to perform its obligations pursuant to this Contract, and comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any government authority.

20. Responsibility for Those Performing the Work

(a) Contractor shall be responsible for the acts and omissions of all Contractor's employees and all subcontractors, their agents and employees, and all other persons under contract with Contractor, while performing the duties and responsibilities associated with this Contract.

(b) Contractor shall at all times enforce strict discipline and good order among Contractor's employees and shall not employ any unfit person or anyone not skilled in the task assigned.

(c) Incompetent or incorrigible employees shall be dismissed from the project by Contractor, when so determined by the University. Dismissed individuals shall be prohibited from being employed or utilized by Contractor as part of the services Contractor provides to the University without the written consent of the University.

21. Confidentiality A party shall not disclose or use any Confidential Information of the other party except as reasonably necessary to perform its obligations or exercise its rights pursuant to this Agreement except with the other party's prior written permission. Confidential Information means any information or data (including without limitation any formula, pattern, compilation, program, device, method, technique, process, or student "education records," including but not limited to Social Security Numbers, records and information protected by the Health Insurance Portability and Accountability Act of 1996 ("HIPAA") records protected by the Family Educational Rights and Privacy Act ("FERPA"), 20 U.S.C. § 1232g, and defined in 20 U.S.C. § 1232g(a)(4)(A)(i) or information that is otherwise identified by either party in writing as confidential or is of such a nature that a reasonable person would understand such data and/or information to be confidential) that is disclosed by one party (a disclosing party) to the other party (a receiving party) pursuant to this Agreement, so long as such information is subject to reasonable efforts by the disclosing party to preserve its confidentiality.

22. Export Control Contractor shall comply with all U.S. export control laws and regulations, including but not limited to the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 774, in the performance of this Contract. In the absence of available license exemptions/exceptions, Contractor shall be responsible for obtaining the appropriate licenses or other authorizations, if required, for exports of hardware, technical data, and software, or for the provision of technical assistance. Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

Prior to disclosing or transferring to the University any hardware, technical data, software or product utilizing any hardware, technical data or software which is subject to export controls under federal law, Contractor shall notify the University in writing of the nature and extent of the export control. University shall have the right to decline any such technical data or product utilizing such data. In the event Contractor sends any such technical data or product that is subject to export control, without notice of the applicability of such export control, University has the right to immediately terminate this Contract.

23. Packaging, Transportation, and Handling All packaging, transportation and handling of hazardous materials shall be in accordance with applicable federal and state regulations including, but not limited to, the Material Safety Data Sheet provision of O.S.H.A. Hazard Communication Standard 29 CFR 1910.1200, and Iowa Administrative Code.

24. Licensed in Iowa Any Contractor awarded a contract must be licensed to do business in the State of Iowa. ISU reserves the right to waive the license requirement for any state or U.S. territory other than the State of Iowa.

25. Equality of Equipment The scope of work and specifications outlined in Section II are the basis of this RFP and shall be used to determine equality of equipment offered. Equipment, in the opinion of ISU, equal to or better than the performance and quality specified will be considered.

26. Final Acceptance of Equipment after Delivery and Installation It shall be mutually understood and agreed that final acceptance of the aforementioned equipment and services shall not occur until after a thirty (30) consecutive day successful operation and testing period by ISU personnel, to commence on the day following completion of installation and testing by Contractor. Commencement of any warranty period shall not begin until after final acceptance of the equipment by ISU.

27. Shipping
    a. All orders shipped to ISU via common carrier, will be declared at their exact value and fully insured. Insurance which is based on a payout per pound of weight is not acceptable. All order acknowledgments must include confirmation of a fully insured shipment.

    b. This term may only be taken exception to by Contractors bidding delivery as F.O.B. Installed or F.O.B. Destination.

28. Warranty
    a. The Contractor shall unconditionally warrant the product as being free from defect and capable of performing to the requirements of this offer when operated by ISU within the parameters specified in the manufacturer's specifications. Within one (1) year from final acceptance of said equipment, the Contractor shall correct all errors subsequently discovered in the design not due to the fault and negligence of ISU and without charge to ISU.

    b. Contractor expressly warrants that all goods supplied hereunder shall be merchantable in accordance with the Uniform Commercial Code and Iowa Code sections 554.2101 through 554.2725.

    c. Attempts to avoid warranties of merchantability, fitness for a particular purpose and all other express and implied warranties by use of preprinted terms appearing on Contractor's forms will be deemed of no effect, and Contractor so agrees by responding to this bid solicitation. Contractors are hereby notified and agree that any express wording that waives the above warranties will be grounds for rejection of Contractor's bid. Warranties may be considered in the bid evaluation process.

29. Duty Free Entry
    a. ISU will take the necessary action to provide for duty free entry of goods shown hereon into the United States.
    b. Contractors should not include customs duty charges as a part of their base bid, but show the amount of duty applicable as a separate line item. As duty-free entry cannot be assured, the cost of such customs duty will be considered in evaluation of bids.

30. Delivery Any order resulting from this RFP must be shipped complete. No partial shipments will be accepted.

31. Installation
    a. All orders must include installation by a fully qualified field service engineer with prior experience installing equipment similar to that offered in Contractor offers.

b. Installation shall commence no later than 20 days after delivery and shall be completed no later than 30 days after delivery.

32. Acceptance Testing Subsequent to completion of installation of equipment and training of operators, ISU personnel shall perform acceptance testing to verify equipment performance in accordance with the Specification which is attached hereto, for a thirty (30) consecutive day operational and testing period. Upon successful completion of acceptance testing, ISU shall provide Seller with written notification of acceptance. If ISU acceptance testing finds that the equipment is non-compliant to the Specification, ISU shall provide written notification to Seller stating the specific aspects of the equipment found to be non-compliant, and Seller will then correct equipment deficiencies as stated in Attachment A.15.b. ISU will then be granted another 30 day acceptance testing period pursuant to this section. Title to said equipment shall remain with Seller until receipt of written acceptance from ISU. Commencement of any warranty period shall not begin until after final acceptance of the equipment by ISU.

33. Progress Payments, Final Acceptance and Payment Terms

a. ISU shall pay the Contractor, upon submission of proper invoices, the prices stipulated in this contract for deliverables (i.e., design drawings, equipment, installation, training, successful operation) rendered and accepted, less any deductions provided in this contract. Progress payment terms shall be:

i. Stage 1: 30 percent after preliminary design approval;
ii. Stage 2: 15 percent after final design approval;
iii. Stage 3: 15 percent after receipt of major components and ready to build;
iv. Stage 4: Thirty percent after successful shipment, installation and training;
v. Stage 5: Ten percent after 60 days of successful operation.

b. Payment terms will be used as a consideration in making an award. Iowa statutes require Contractors to provide surety for prepayment terms. This surety may be in the form of a Performance Bond or other acceptable form of surety.

c. Terms other than those indicated above will be subject to ISU approval. If other terms are offered, they must be clearly indicated on Contractor's bid response.

d. Per Section 8A.514 of the Iowa Code, late interest may only be charged at the rate of 1% per month after 60 days.

34. Payment Discounts/Invoices Payment discount terms, if part of the contract, should appear on your invoice to insure proper processing. Invoices requesting payment for materials or services provided for the ISU department covered by this contract, shall reference the contract number or Purchase Order (PO) provided and be mailed to the address below: Iowa State University Procurement, 1340 Administrative Services Building Ames, IA 50011-3617 or e-mailed to invoices@iastate.edu.

35. Records for Audit The Contractor shall maintain records and documents, which sufficiently and properly document all sales to ISU and associated business activities with ISU throughout the term of the agreement for a period of at least three (3) years following the termination of the agreement or completion of any required audit, whichever is later. Records to be maintained include both financial records and service records. The Contractor shall permit the Auditor of the State of Iowa, Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives, or any authorized auditor or representative of the ISU, to access and examine, audit, excerpt and transcribe any directly pertinent documents, papers, electronic or optically stored and created records or other records relating to the services provided or payments made under the terms of the Agreement, wherever such records may be located. Contractor shall not impose a charge for audit or examination of such records. If an audit discloses incorrect billings or improprieties, ISU

reserves the right to charge the Contractor for the cost of the audit and appropriate reimbursement.

36. Public Records The laws of the State of Iowa require procurement records to be made public unless exempted by the Code of Iowa.

37. Advertising Contractor shall not use or reference the name of Iowa State University as a part of any commercial advertising without prior written approval of ISU's VPBF (Vice President for Business & Finance) and its Trademark and Licensing Office.

38. Computer Software (If applicable)

a. Updates or additions to software which improve the performance or capabilities of the unit will be provided at no charge to the University, if such updates or additions become available during the initial warranty period.

b. The Contractor must indicate the software programs included in its offer. If the Contractor's offer includes software presently in the development stage, specify the anticipated availability schedule. Contractors must indicate their policy for software updating as new programs (and/or improved programs) become available.

c. Software documentation must be included and provide a thorough description of the use and operation of all routines. ISU will sign a nondisclosure agreement if deemed appropriate by the Contractor.

39. Software Accessibility Software solutions, when provided to the University as a part of this Contract, shall be compliant with Federal statute Section 508 standards and W3C.org Web Content Accessibility Guidelines (WCAG 2.0 Level AA) for accessibility for persons with disabilities for the minimum level of accessibility. Review the links provided for specifics related to these referred to standards and guidelines. WCAG guidelines www.w3.org/TR/WCAG20/ and Section 508 www.section508.gov/. University reserves the right to request that the Contractor provide audit and/or test results that document the software's compliance and the testing methodology utilized.

40. Patent and Copyright Protection

a. The Contractor, at its own expense, will defend any suit which may be brought against ISU to the extent that it is based on a claim that the system furnished hereunder infringes a United States patent, and in any such suit which is attributable to such claim. This is upon the condition that ISU shall give the Contractor prompt written notice of such claim and full right and opportunity to conduct the defense thereof, together with full information and all reasonable cooperation, and upon further condition that the claimed infringement does not result from the combinations of the system furnished hereunder with other systems, apparatus, or devices not furnished hereunder. No cost or expenses shall be incurred for the account of the Contractor without its written consent. If principles of governmental or public law are involved, ISU may participate in the defense of any such action.

b. If, in the Contractor's opinion, the services furnished hereunder are likely to or does become the subject of a claim of infringement of a United States patent, then without diminishing the Contractor's obligation to satisfy the proposal requirements, the Contractor may, at its option and expense (1) obtain the right for ISU to continue the use of such item, (2) substitute for the alleged infringing work other equally suitable work satisfactory to ISU. The foregoing states the entire liability of the Contractor with respect to the infringement of patents by the system furnished hereunder or any party thereof.

41. Export Administration Regulations (EAR) Contractor will indicate in all order acknowledgements whether the item ordered is restricted under the terms of Export Administration Regulations. The notice should indicate which tier or grouping of countries are restricted, or the ECCN Citation Number related to the product. For more

information on EAR regulations visit: http://www.access.gpo.gov/bis/ear/ear_data.html

42. International Traffic in Arms Regulations (ITAR) Contractor will indicate in all order acknowledgements whether the item ordered is restricted under the terms of International Traffic in Arms Regulations. The notice should indicate which countries are prohibited from receiving the items procured under ITAR. For more information concerning ITAR visit: http://www.pmddtc.state.gov/regulations_laws/itar.html

43. Guarantee Seller warrants and guarantees to buyer that the articles are in compliance with sections 5 and 12 of the Federal Trade Commission Act; the Fair Packaging and Labeling Act; the Federal Food, Drug and Cosmetic Act; the Consumer Product Safety Act; the Federal Insecticide, Fungicide and Rodenticide Act; the Federal Hazards and Substance Act; the Fair Labor Standards Act; the Wool Products Labeling Act; the Flammable Fabrics Act; the Occupational Safety and Health Act; and the Federal Anti-Kickback Enforcement Act; Debarment and Suspension policies (E.O.s 12549 and 12689); Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333); Rights to Inventions Made Under a Contract or Agreement in accordance with 37 CFR part 401; Byrd Anti-Lobbying Amendment (31 U.S.C. 1352); Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), as amended; Davis-Bacon Act, as amended (40 U.S.C. 276a to a-7).

44. Hazardous Material All packaging, transportation and handling of hazardous materials shall be in accordance with applicable federal and state regulations including, but not limited to, the Material Safety Data Sheet provision of O.S.H.A. Hazard Communication Standard 29 CFR 1910.1200, and Iowa Administrative Code, Section 530.

45. Clean Air and Water Certification Contractor certifies by filling this order, that its facility(ies) is(are) not on the Environmental Protection Agency (EPA) List of Violating Facilities. Contractor will immediately notify buyer's purchasing department of the receipt of any communication indicating that any Contractor's facilities are under consideration to be listed on the EPA List of Violating Facilities.

46. Debarred, Suspended and Ineligible Status Contractor certifies that it has not been debarred, suspended, or declared ineligible nor is it included on the General Services Administration's List of Parties Excluded from Federal Procurement or Non-procurement Programs in accordance with Executive Orders 12549 and 12689. Contractor will immediately notify University's purchasing department if Contractor is placed on this list.

47. [ ] If this box is checked, this bid and resulting order fall under the Federal Acquisition Regulations https://www.acquisition.gov/far/ and at a minimum the following FAR provisions are incorporated by reference: 52.203-6 Restrictions on Subcontractor Sales to the Government and Alternate I; 52.204-6 Data Universal Numbering System Number.; 52.212-1Instructions to Offerors Commercial Items.; 52.212-2 Evaluation—Commercial Items.; 52.212-3 Offeror Representations and Certifications—Commercial Items.; 52.212-4 Contract Terms and Conditions— Commercial Items.; 52.212-5 Contract Terms and Conditions Required to Implement Statutes or Executive Orders—Commercial Items and Alternate I and Alternate II; 52.216-24 Limitation of Government Liability.; 2.216-25 Contract Definition and Alternate I; 52.223-1 Biobased Product Certification; 52.223-18 Encouraging Contractor Policies to Ban Text Messaging While Driving; 52.219-3 Notice of HUBZone Set-Aside or Sole Source Award and alternate I; 52.219-4 Notice of Price Evaluation Preference for HUBZone Small Business Concerns, and Alternate I; 52.222-18 Certification Regarding Knowledge of Child Labor for Listed End Products; 52.222-19 Child Labor— Cooperation with Authorities and Remedies.; 2.222-40 Notification of Employee Rights Under the National Labor Relations Act.; 52.225-1 Privacy Act Notification; 52.225-3 Buy American Act—Free Trade Agreements—Israeli Trade Act.; 52.225-8 Duty-Free Entry; 52.225-13 Restrictions on Certain Foreign Purchases.; 52.225-17 Evaluation of Foreign Currency Offers.; 52.225-25 Prohibition on Contracting with Entities Engaging in Certain Activities or Transactions Relating to Iran—Representation and Certifications and 52.233-4 Applicable Law for Breach of Contract Claim.

Attachment B - References

#1 Name _____

Firm _____

Phone # _____

Email _____

#2 Name _____

Firm _____

Phone # _____

Email _____

#3 Name _____

Firm _____

Phone # _____

Email _____

Attachment C – Sustainability Information

Iowa State University is involved with several initiatives to improve sustainability. Contractors must provide a response to all sections that appear below.

1 Product's Country of Origin: State the country (or countries) of origin for the products purchased on the order. U.S. Free Trade Zone products must be listed as the country in which they were manufactured (i.e. where the free trade zone was established):

☐ Peoples Republic of China	☐ Taiwan (Republic of China)
☐ Indonesia	☐ United States
☐ Germany	☐ Great Brittan
☐ France	☐ Mexico
☐ Japan	☐ Other _____

2 Contractor's Shipping Point: The products purchased on this order will ship from:

_____, _____, _____
Country City State (USA only)

Add additional shipping points if applicable.

Total Shipping Weight _____

3 Mode of Transportation to ISU from Contractor's facility: Indicate the primary mode of transportation used for shipment (i.e., that will be used for the greater distance.) If you use an express carrier or Postal Service, ISU will determine the mode):

☐ Air freight	☐ Ocean Surface transport
☐ Rail	☐ Motor Carrier
☐ Express Carrier (i.e., Fed X, UPS, etc.)	☐ United States Postal Service.

4 Packaging: The product(s) on this order will be shipped in [check all that apply]:

- ☐ Bio-degradable packaging
- ☐ Packaging materials made from 100% postconsumer recycled products
- ☐ Packaging materials made from corn or plant based products
- ☐ Packaging Materials that can be recycled
- ☐ Packaging materials that are non-toxic
- ☐ Packaging materials that are reusable
- ☐ Packaging consisting of virgin materials

5 Energy Consumption: The product or a portion of products in this order are rated for the following energy efficiency programs:

- ☐ **Energy Star** rated as certified by the Federal Energy Management Program
- ☐ Electronic Product Environmental Assessment Tool (EPEAT) Bronze
- ☐ Electronic Product Environmental Assessment Tool (EPEAT) Silver
- ☐ Electronic Product Environmental Assessment Tool (EPEAT) Gold
- ☐ Other Nationally or internationally recognized energy efficiency ratings:_____

  _____
- ☐ Products are not energy efficiency rated.

6 Product's Recycled Content: The product or a portion of products in this order have the following recycled material content:

- ☐ Recycled steel content: state percentage _____%
- ☐ Recycled plastic content: state percentage _____%
- ☐ Recycled rubber content: state percentage _____%
- ☐ Recycled wood products: state percentage _____%
- ☐ Other recycled content: state type and percentage:

  _____, _____%
- ☐ Product(s) contain no recycled content

7 Product's Green Certification: The product or a portion of products in this order have the following Green Certifications:

_____

_____

_____

- ☐ Product does not have a Green Certification

Insurance Requirements

Insurance and Related Requirements
The Contractor shall obtain and maintain the minimum insurance coverages set forth below. By requiring such minimum insurance, ISU shall not be deemed or construed to have assessed the risk that may be applicable to the Contractor arising from Contractor's business operation. The Contractor shall assess its own risk and if it deems appropriate and/or prudent, maintain higher limits and/or broader coverages. The Contractor is not relieved of any liability or other obligations assumed or pursuant to the Agreement by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.

Minimum insurance coverages and requirements are as follows:

Commercial General Liability

General Aggregate	$2,000,000
Each Occurrence Limit	$1,000,000

Automobile
$1,000,000 combined single limit each accident to include owned, non-owned, hired, or rented vehicles.

Umbrella Liability
$1,000,000 each occurrence/$1,000,000 aggregate providing excess liability over the General Liability, Auto Liability and Employers Liability.

Worker's Compensation and Employer's Liability
Statutory Limits of $100,000/$500,000/$100,000

Worker's Compensation Policy shall include a Waiver of Subrogation in favor of Iowa State University; Board of Regents, State of Iowa; and the State of Iowa. Endorsement form WC 00 03 13 shall be attached to the Certification of Insurance if waiver language is not stated on the actual certificate.

Workers Compensation coverage is required for all personnel working under this agreement for Iowa State University. All of the contractor's employees, partners, members, officers and sole proprietors must be included.

Professional Liability (Errors and Omissions)
$1,000,000 per occurrence

Additional Requirements

- The company(ies) providing coverage must be at least A- Class VII rated by A.M. Best Company.

- The State of Iowa; the Board of Regents, State of Iowa; and Iowa State University **must be named as additional insureds** for General Liability and Excess Liability. All legal entities referenced above must be individually listed on the certificate as an additional insured for liability coverage. Additional insured status shall be on a primary and non-contributory basis.

  The Policy shall name Iowa State University; the Board of Regents, State of Iowa; and, the State of Iowa as additional insureds with respect to all operations and related work and shall provide that such insurance applies separately to each insured against whom claim is made or suit is brought. The additional insureds shall be added under CG 2026 endorsement or older edition dates and attached to the certificate of insurance.

- Iowa State University requires occurrence coverage. The certificates should be marked "occurrence." If there is no box marked "occurrence," we require the notation "occurrence form" in the Special Conditions box.

- Contractor must maintain insurance coverage throughout the term of the work. Failure to maintain insurance coverage throughout the term shall be considered a breach of contract.

- All policies must be written on a primary basis, non-contributory with any other insurance and/or any self-insured funds of Iowa State University; State of Iowa; and Board of Regents, State of Iowa.

- Contractor shall require all of its Subcontractors and their respective Sub-subcontractors to carry insurance coverage that meets these same insurance requirements or insure the activities of Subcontractors in the Contractor's own policy.

- All policies and endorsements may not be non-renewed, cancelled or materially changed or altered unless thirty (30) days' advance written notice via certified mail is provided to Iowa State University, Procurement Services Department.

The certificate must submitted by email, fax or U.S. Mail to:

Iowa State University
Procurement Services Department
1340 Administrative Services Bldg.
2221 Wanda Daley Drive
Ames, IA 50011-1004
Phone: 515-294-4860 Fax: 515-294-9606
Procurement@iastate.edu