

INVITATION TO BID		LSU	BID DUE DATE AND TIME	
BOARD OF SUPERVISORS OF LOUISIANA STATE UNIVERSITY AND AGRICULTURAL & MECHANICAL COLLEGE			09/03/2026 11:00 AM CT	
SOLICITATION RFQ-0000002894 SUPPLIER # SUPPLIER NAME AND ADDRESS 			RETURN BID TO lsubids@lsu.edu Buyer Erica Pino Buyer Phone Buyer Email epino2@lsu.edu Issue Date 08/13/2026	
TITLE: REBID - Linear Walking Irrigation System				
To Be Completed By Supplier _____ "No Bid" (sign and return this page only). _____ My Company does not wish to receive future solicitations for this spend category. - Specify your Delivery: To be made within _____ days after receipt of order. - If applicable, Supplier's Addendum Acknowledgement/Response: As an authorized agent/signatory of the supplier, I/we acknowledge receipt of this Addendum, and _____ submit no alterations/clarifications to our original bid. _____ submit superseding revisions/clarifications to our original bid as written herein or attached hereto. General Instructions to Suppliers - Sealed bids for furnishing the items and/or services specified are hereby solicited, and will be received by LSU Procurement at the "Return Bid To" address stated above, until the specified due date and time. - Read the entire solicitation, including all terms, conditions and specifications. - All bid information and prices must be typed or written in ink. Any corrections, erasures or other forms of alteration to unit price are to be initialed by the supplier. - Bid prices are to be quoted FOB LSU/Destination and inclusive of any and all applicable shipping and handling charges unless otherwise specified in the solicitation. Any invoiced delivery charges not quoted and itemized on the LSU purchase order are subject to rejection and non-payment. - Payment is to be made within 30 days after receipt of properly executed invoice, or delivery and acceptance, whichever is later. - By signing this solicitation, the supplier certifies compliance with all general instructions to suppliers, terms, conditions and specifications; and further certifies that this bid is made without collusion or fraud.				
SUPPLIER NAME			MAILING ADDRESS	
AUTHORIZED SIGNATURE			CITY, STATE ZIP	
PRINTED NAME			PHONE #	
TITLE			FAX #	
E-MAIL			FEDERAL TAX ID #	

SPECIAL TERMS & CONDITIONS	INVITATION TO BID	Page 2
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1. Bid Submission Information All bids must be submitted electronically to LSU Procurement Services. Bids must be received at the "Return Bid To" email address no later than the due date and time specified herein. Bids must be emailed to lsubids@lsu.edu (<i>This email address should be used for bid submissions only</i>). Any bids sent directly to the Buyer of record will not be forwarded to the "Return Bid To" email. When submitting electronically, the RFQ number and solicitation title should be listed in the subject line of the email. An original and redacted copy (if applicable) must be submitted electronically. Hard copies of bids will not be accepted; therefore, they will not be evaluated. It is the responsibility of the Supplier to ensure the bid is received by LSU Procurement by the indicated due date and time. Any delays that may occur in transmission of the bid is the responsibility of the supplier. A bid will be considered late if it is not received at the "Return Bid To" email address by the indicated due date and time. The maximum email attachment size accepted is 125 MB. It is the supplier's responsibility to ensure bid submission is sized such that it is successfully transmitted and received by LSU. If the bid response is too large to be emailed as one document, the bid must be sent as separate documents. Each submittal should be labeled. (Example – Bid Submittal 1 out of 3 for RFQ-000000XXXX - Title; Bid Submittal 2 out of 3 for RFQ-000000XXXX - Title, etc.). If any submittal is received late, LSU will not consider the late submittal(s). Only the submittal(s) received by the due date and time will be considered. Late bids will not be accepted per LAC 34:XIII.515.B. 2. Bid Opening Information Bid openings are held electronically. There are no in-person bid openings. To electronically attend the bid opening, use the below link to register in advance: https://lsu.zoom.us/meeting/register/QLfFbZmRqio9DF9ESf0QA After registering, a confirmation email will be provided containing information about joining the bid opening. No information or opinions concerning the ultimate contract award will be given at bid opening or during the evaluation process. If an unforeseen circumstance beyond LSU's control prevents bid opening, the Bid will open at the next scheduled bid opening date. 3. Method of Award All or None - Bid shall be awarded to the lowest responsible and responsive supplier for all items. 4. Insurance Requirements Please note attached insurance requirements. Successful bidder will be required to furnish a certificate of insurance evidencing required coverages and naming the Board of Supervisors of Louisiana State University and Agricultural and Mechanical College as an additional insured on all liability policies. 5. Bid prices are to be quoted FOB Destination and inclusive of any and all applicable charges.		

STANDARD TERMS & CONDITIONS	INVITATION TO BID	Page 3
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These standard terms and conditions shall apply to all LSU solicitations, unless otherwise specifically amended and provided for in the special terms and conditions, specifications, or other solicitation documents. In the event of conflict between the General Instructions to Suppliers or Standard Terms & Conditions and the Special Terms & Conditions, the Special Terms & Conditions shall govern. Bids submitted are subject to provisions of the laws of the State of Louisiana, including but not limited to: the University Procurement Code (LAC 34:XIII. Chapters 3-25) and the terms, conditions, and specifications stated in this solicitation.		
1. Supplier Enrollment		
Suppliers providing a bid/quote in response to a LSU solicitation must be setup in the University's new procurement system (Workday) for bid tabbing and award of a purchase order. Suppliers should complete the online supplier registration form prior to submitting a bid response and/or the bid due date and time to ensure bid tabbing can be done timely after the bid deadline. This website is used in place of a paper form and must be accompanied with an IRS Request for Taxpayer Identification Number and Certification form (W-9 or W-8 if foreign) to collect the required business and tax information that support the University's reporting and compliance requirements. To inquire if you or your company is setup or for questions regarding setup, email suppliers@lsu.edu. The supplier enrollment form can be located at: http://www.lsu.edu/administration/ofa/procurement/supplier_registration.php		
2. Bid Delivery and Receipt		
Bids must be received and time-stamped at the "Return Bid To" email address no later than the due date and time specified herein. The University shall not be responsible for any delays caused by the supplier's chosen means of bid delivery. Supplier is solely responsible for the timely delivery of its bid, and failure to meet the bid due date and time shall result in rejection of the bid. Late bids cannot be accepted per LAC 34:XIII.515.B.		
3. Bid Forms		
Bids are to be submitted on the LSU solicitation forms provided, and must be signed by an authorized agent of the supplier in accordance with LAC 34:XIII.517. Bids submitted on other forms or in other price formats may be considered informal and may be rejected in part or in its entirety. Bids submitted in pencil and/or bids containing no original signature indicating the supplier's intent to be bound will not be accepted. Bid submissions should not be spiral bound.		
4. Interpretation of Solicitation/Supplier Inquiries		
If supplier is in doubt as to the meaning of any part or requirement of this solicitation, supplier may submit a written request for interpretation to the Buyer-of-Record at the address and/or fax number shown above. Written inquiries must be received in the Procurement Office no later than 4:30 pm CST four (4) business days prior to the opening of bids, and shall be clearly crossreferenced to the relevant solicitation/specification in question. No decisions or actions shall be executed by any supplier as a result of oral discussions with any LSU employee or consultant. Any interpretation of the documents will be made by formal addendum only, issued by the Procurement Office, and mailed or delivered to all suppliers known to have received the solicitation. LSU shall not be responsible for any other interpretations or assumptions made by supplier.		
5. Bid Addenda		
Bid Addendum is to be signed and returned with your bid. If you have already submitted your bid, and this Addendum creates a need to revise/clarify your original response in any way, you are required to submit such in writing. To be considered, your addendum response must be submitted to and received by LSU Procurement at the "Return Bid To" address stated above. Submittals for price alterations and addenda to bids must be clearly marked with the solicitation number and the bid due date/ time and returned via fax, email, courier service, hand delivery, or USPS mail. Bid revisions received after bid opening cannot be considered, whereupon the supplier must either honor or withdraw its original bid.		
6. Bid Opening		
Suppliers may attend the public bid opening of sealed bids. No information or opinions concerning the ultimate contract award will be given at bid opening or during the evaluation process. Written bid tabulations will not be furnished.		
7. Special Accommodations		
Any "qualified individual with a disability" as defined by the Americans with Disabilities Act, who has submitted a bid and desires to attend the public bid opening, must notify the Procurement Office in writing not later than seven days prior to the bid opening date of their need for special accommodations. If the request cannot be reasonably provided, the individual will be informed prior to the bid opening.		

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8. Standards of Quality Any product or service bid shall conform to all applicable federal, state and local laws and regulations, and the specifications contained in the solicitation. Any manufacturer's name, trade name, brand name, or catalog number used in the specification is for the purpose of describing the standard of quality, performance, and characteristics desired; and is not intended to limit or restrict competition. Supplier must specify the brand and model number of the product offered in his bid. Bids not specifying brand and model number shall be considered as offering the exact product specified in the solicitation. 9. New Products/Warranty/Patents All products bid for purchase must be new, never previously used, of the manufacturer's current model and/or packaging, and of best quality as measured by acceptable trade standards. No remanufactured, demonstrator, used or irregular products will be considered for purchase unless otherwise specified. The manufacturer's standard published warranty and provisions shall apply, unless more stringent warranties are otherwise required by LSU and specified in the solicitation. In such cases, the supplier and/or manufacturer shall honor the specified warranty requirements, and bid prices shall include any premium costs of such coverage. Supplier guarantees that the products proposed and furnished will not infringe upon any valid patent or trademark; and shall, at its own expense, defend any and all actions or suits charging such infringement, and shall save LSU harmless. 10. Descriptive Information Suppliers proposing an equivalent brand or model are to submit with the bid descriptive information (such as literature, technical data, illustrations, etc) sufficient for LSU to evaluate quality, suitability, and compliance with the specifications. Failure to submit descriptive information may cause bid to be rejected. Any changes made by supplier to a manufacturer's published specifications shall be verifiable by the manufacturer. If items bid do not fully comply with specifications, supplier must state in what respect items deviate. Supplier's failure to note exceptions in its bid will not relieve the supplier from supplying the actual products requested. 11. Bids/Prices/F.O.B. Point • The bid price for each item is to be quoted on a "net" basis and F.O.B. LSU Destination, i.e. title passing upon receipt and inclusive of all delivery charges, any item discounts, etc. • Bids other than F.O.B. LSU Destination may be rejected. • Bids indicating estimated freight charges may be rejected. • Bids requiring deposits, payment in advance, or C.O.D. terms may be rejected. • Suppliers who do not quote "net" item prices and who separately quote an overall "lump sum" freight cost or discount for all items shall be considered as submitting an "all-or-none" bid for evaluation and award purposes; and risk rejection if award is made on an item or grouped basis. • Prices shall be firm for acceptance for a minimum of 30 days, unless otherwise specified. Bids conditioned with shorter acceptance periods may be rejected. • Prices are to be quoted in the unit/package specified (e.g. each, 12/box, etc), or may be rejected. • In the event of extension errors, the unit price bid shall prevail. 12. Taxes Supplier is responsible for including all applicable taxes in the bid price. LSU is exempt from all Louisiana state and local sales and use taxes. By accepting an award, resident and non-resident firms acknowledge their responsibility for the payment of all taxes duly assessed by the State of Louisiana and its political subdivisions for which they are liable, including but not limited to: franchise taxes, privilege taxes, sales taxes, use taxes, ad valorem taxes, etc. 13. Terms and Conditions This solicitation contains all terms and conditions with respect to the purchase of the goods and/or services specified herein. Submittal of any contrary terms and conditions may cause your bid to be rejected. By signing and submitting a bid, supplier agrees that contrary terms and conditions which may be included in its bid are nullified. 14. Supplier Forms/LSU Signature Authority The terms and conditions of the LSU solicitation and purchase order/contract shall solely govern the purchase agreement, and shall not be amended by any supplier contract, form, etc. The University's chief procurement officer, or authorized designee, is delegated sole authority to execute/sign any supplier contracts, forms, etc, on behalf of LSU. Departments are expressly prohibited from signing any supplier forms. Any such supplier contracts/forms bearing unauthorized signatures shall be null and void, shall have no legal force, and shall not be recognized by LSU in any dispute arising therefrom. Suppliers who present any such forms to department users for signature without regard to this strict LSU policy may face contract cancellation, suspension, and/or debarment. 15. Awards Award will be made to the lowest responsible and responsive supplier. LSU reserves the right: (1) to award items separately, grouped, or on an all-or-none basis, as deemed in its best interest; (2) to reject any or all bids and/or items; and (3) to waive any informalities. All solicitation specifications, terms and conditions shall be made part of any subsequent award as if fully reproduced and included therein, unless specifically amended in the formal contract.		

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16. Acceptance of Bid Only the issuance of an official LSU purchase order/contract, a Notification of Award letter, or a Notification of Intent to Award letter shall constitute the University's acceptance of a bid. LSU shall not be responsible in any way to a supplier for goods delivered or services rendered without an official purchase order/contract or award letter. Bid tabulations may be requested after acceptance of bid. 17. Applicable Law All contracts shall be construed in accordance with and governed by the laws of the State of Louisiana. 18. Awarded Products/Unauthorized Substitutions Only those awarded brands and numbers stated in the LSU contract are approved for delivery, acceptance, and payment purposes. Any substitutions require prior approval of the Procurement Office. Unauthorized product substitutions are subject to rejection at time of delivery, post-return at supplier's expense, and non-payment. 19. Testing/Rejected Goods Supplier warrants that the products furnished will be in full conformity with the specification, drawing or sample, and agrees that this warranty shall survive delivery, acceptance, and use. Any defect in any product may cause its rejection. LSU reserves the right to test products for conformance to specifications both prior to and after any award. Supplier shall bear the cost of testing if product is found to be non-compliant. All rejected goods will be held at supplier's risk and expense, and subject to supplier's prompt disposition. Unless otherwise arranged, rejected goods will be returned to the supplier freight collect. 20. Delivery Supplier is responsible for making timely delivery in accordance with its quoted delivery terms. Supplier shall promptly notify the LSU Department and/or Procurement Office of any unforeseen delays beyond its control. In such cases, LSU reserves the right to cancel the order and to make alternative arrangements to meet its needs. 21. Default of Supplier Failure to deliver within the time specified in the bid/award will constitute a default and may be cause for contract cancellation. Where the University has determined the supplier to be in default, LSU reserves the right to purchase any or all goods or services covered by the contract on the open market and to surcharge the supplier with costs in excess of the contract price. Until such assessed surcharges have been paid, no subsequent bids from the defaulting supplier will be considered for award. 22. Supplier Invoices Invoices shall reference the LSU purchase order number, supplier's packing list/delivery ticket number, shipping/delivery date, etc. Invoices are to be itemized and billed in accordance with the order, and submitted on the supplier's own invoice form. Invoices submitted by the supplier's third party supplier are not acceptable. 23. Delinquent Payment Penalties Delinquent payment penalties are mandated and governed by Louisiana R.S. 39:1695. Supplier penalties to the contrary shall be null and void, shall have no legal force, and shall not be recognized by LSU in any dispute arising therefrom. 24. Assignment of Contract/Contract Proceeds Supplier shall not assign, sublet or transfer its contractual responsibilities, or payment proceeds thereof, to another party without the prior written consent and approval of the Procurement Office. Unauthorized assignments of contract or assignments of contract proceeds shall be null and void, shall have no legal force, and shall not be recognized by LSU in any dispute arising therefrom. 25. Right to Piggyback Where this solicitation may name one department as the primary contract user, LSU reserves the right to authorize additional departments/campuses to use the contract as their needs arise; and Vendor shall honor all such purchase orders. 26. Contract Cancellation LSU has the right to cancel any contract for cause, in accordance with procurement rules and regulations, including but not limited to: (1) failure to deliver within the time specified in the contract; (2) failure of the product or service to meet specifications, conform to sample quality or to be delivered in good condition; (3) misrepresentation by the supplier; (4) fraud, collusion, conspiracy or other unlawful means of obtaining any contract with the University; (5) conflict of contract provisions with constitutional or statutory provisions of state or federal law; (6) any other breach of contract. LSU has the right to cancel any contract for convenience at any time by giving thirty (30) days written notice to the supplier. In such cases, the supplier shall be entitled to payment for compliant deliverables in progress. 27. Prohibited Contractual Arrangements Per Louisiana R.S. 42:1113.A, no public servant, or member of such a public servant's immediate family, or legal entity in which he has a controlling interest shall bid on or enter into any contract, subcontract, or other transaction that is under the supervision or jurisdiction of the agency of such public servant. See statute for complete law, exclusions, and provisions.		

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28. Equal Employment Opportunity Compliance By submitting and signing this bid, supplier agrees to abide by the requirements of the following as applicable: Title VI and VII of the Civil Rights Act of 1964, as amended by the Equal Opportunity Act of 1972; federal Executive Order 11246; federal Rehabilitation Act of 1973, as amended; the Vietnam Era Veteran's Readjustment Assistance Act of 1974; Title IX of the Education Amendments of 1972; the Age Act of 1975; the Americans with Disabilities Act of 1990. Supplier agrees not to discriminate in its employment practices, and will render services under any contract entered into as a result of this solicitation without regard to race, color, religion, sex, age, national origin, veteran status, political affiliation, handicap, disability, or other non-merit factor. Any act of discrimination committed by supplier, or failure to comply with these statutory obligations when applicable, shall be grounds for termination of any contract entered into as a result of this solicitation. 29. Mutual Indemnification Each party hereto agrees to indemnify, defend, and hold the other, its officers, directors, agents and employees harmless from and against any and all losses, liabilities, and claims, including reasonable attorney's fees arising out of or resulting from the willful act, fault, omission, or negligence of the indemnifying party or of its employees, contractors, or agents in performing its obligations under this agreement, provided however, that neither party hereto shall be liable to the other for any consequential damages arising out of its willful act, fault, omission, or negligence. 30. Certification of No Suspension or Debarment By signing and submitting this bid, supplier certifies that its company, any subcontractors, or principals thereof, are not suspended or debarred under federal or state laws or regulations. A list of parties who have been suspended or debarred by federal agencies is maintained by the General Services Administration and can be viewed on the internet at www.sam.gov. 31. Right to Audit The University shall be entitled to audit the books and records of a supplier or any subcontractor under any negotiated contract or subcontract to the extent that such books and records relate to the performance of such contract or subcontract. Such books and records shall be maintained by the supplier for a period of five (5) years from the date of final payment under the prime contract and by the subcontractor for a period of five (5) years from the date of final payment under the subcontract, pursuant to LAC 34:XIII.1603. 32. Data Privacy By signing and submitting this bid, I hereby authorize that all information provided in this solicitation, including any and all personal or company data may be shared with LSU departments, suppliers and other governmental agencies to facilitate procurement transactions. This data will be retained according to LSU's retention schedule. To learn more about privacy at LSU, please see the LSU Privacy Statement.		

PRICE SHEET		INVITATION TO BID			Page 7	
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ITEM NO.	ITEM DESCRIPTION	QUANTITY	UOM	UNIT PRICE	EXTENDED AMOUNT	
UNLESS SPECIFIED ELSEWHERE, SHIP ALL ITEMS TO: 262 Research Station Dr Bossier City, LA 71112						
1	All or None Installation and Commissioning of Equipment	1	Each	\$ _____	\$ _____	
2	All or None 4 Span Linear Centerfeed Linear Walker and delivery per attached Specifications	1	Each	\$ _____	\$ _____	

New Irrigation System Specifications
Furnish and Install Linear Centerfeed Irrigation System

BACKGROUND/PURPOSE

The LSU AgCenter Red River Research Station located at 262 Research Station Drive, Bossier City, LA 71112 requests bids to furnish and install a new linear move (walking) irrigation system, and all underground piping and risers to dedicated water well, to conduct small plot research related to water management and irrigation efficiency. This new system is replacing aging infrastructure already in place on the station but will be dedicated to a newly drilled well that will be installed under a separate contract/bid.

PART 1 - DESCRIPTION OF WORK

1.1 DESCRIPTION OF WORK

- A. A manufacturer authorized linear irrigation equipment dealer shall furnish, install, and commission one linear, center feed, hose drag, electric drive, multi-tower irrigation system and all required equipment in accordance with the specifications. The description of the equipment to be provided is identified below.

Linear (side)	Span 1	Span 2	Overhang	Flow (gpm)	Pressure (psi)
A	204.9'	204.9'	9'	450	18
B	204.9'	204.9'	9'		

- B. Each unit shall be a self-contained, electrically propelled land irrigation system driven by individual drive unit structures supported by pneumatic rubber tires. The basic power train shall consist of a three-phase electric motor at each drive tower that will drive the wheels through a series of worm gear or helical gear reductions. Each tower must be electrically controlled to maintain the selected operating speed and correct alignment.
- C. An on-board diesel engine generator set will provide the necessary power to propel the system.
- D. A computer control panel will provide operator control from the cart structure.
- E. The linear irrigation equipment shall be supplied by a manufacturer who conforms to Quality Standard, ISO 9001, 1994. The manufacturer must conform to this standard for the Design and Manufacture of Irrigation Products.

1.2 QUALIFICATIONS

- A. All equipment furnished under this section of the specifications shall be new and unused and shall be the product of a manufacturer who has experience in the manufacture of linear irrigation systems.
- B. All equipment provided must be capable of maximum interchangeability of spare parts. The equipment incorporated in this system shall be the product of, and furnished by, a manufacturer who is regularly engaged in the production of such equipment for similar applications, and who has an experience record of fifteen (15) years with installations similar to that identified in these specifications. Three (3) references and proof of similar completed successful projects will be required upon request.

C. License Requirement

The supplier or its subcontractor(s) shall possess and maintain a Louisiana Commercial Contractor's license with the following classification: Landscaping, Grading and Beautification

Proper licensure will be verified by the University prior to award.

The Contractor's license number and classification should be completed below:

LA Contractor's License Number: _____

Classification: _____

PART 2 - SPECIFICATIONS

2.1 GENERAL DESIGN CRITERIA

- A. All electrical components of the system must operate from a 480-volt, three-phase, 60-Hertz, 4-wire power supply to be provided to linear irrigator as per ASAE Standard S397T.
- B. All controls for the electrically operated or motor driven equipment must be complete, including all necessary auxiliary relays to operate ancillary equipment.

- C. Commercially plated fasteners shall be used on all connections, including the drive train U-joints, center drives, and wheel gearboxes.
- D. All necessary fuses or switches required by the manufacturer for his equipment shall be provided with the equipment.
- E. Shall have ability to chemigate or fertigate through the device.
- F. Shall have ability for remote programming and operation.
- G. Shall have a feedback mechanism or alert system for communicating operational failures or other issues remotely.
- H. Capable of functioning under non-static flow rates ranging from 350-500 gpm from existing water well.
- I. Total length of machine must cover a minimum of 800 linear feet across.
- J. Total walking distance of minimum 3,200 linear feet.

2.2 STRUCTURAL

- A. The four-legged cart structure must be erected with minimum 3"x 3" x .250" angle. The diagonal braces must be minimum 1.66" x 12-gauge tube and the horizontal braces must be minimum 2"x 2" x .188" angle. The frame of the cart must be a modular design with the frame rail material 5"x5"x.250" minimum square tube. One side inlet swivel port must be provided to accommodate the auto-reverse feature allowing the operator to not have to unhook and reposition the hose to change the direction of travel at the end of the run. Attaching and detaching of the water delivery hose can still be done if needed.
- B. Steel Pipeline - The main structural water supply pipe must be minimum 12 gauge (.109" wall) hot dipped galvanized steel. A combination of 6 5/8" and 8 5/8" O. D. pipe may be used to minimize the pressure loss through the pivot. Water outlet couplings are 3/4" NPT welded to the top of the pipeline. Outlet spacing to be 30" or 108" (to be determined based upon final design).
- C. Pipe Support Structure - The pipe support structure of the pivot must be of a bow string, under truss design. Vee positioned truss angles must be minimum .163" x 2" x 2" attached to wrap around brackets welded to the pipes. The truss angles must be supported with a minimum .163" x 2" x 2" spreader angle positioned perpendicular to the pipeline. Truss rods must be a minimum 3/4" diameter steel and the rods must have radius hot forged head ends.
- D. Span Connections - The spans must be connected using an external ball and socket flex joint which allows for span-to-span flexibility and does not transmit bending or torsional stresses into the pipe. The pipeline flex hose must be replaceable without disengaging the structural components of the flex joint and without any lifting equipment. The flex joint must not obstruct the water flow inside the pipeline. The flex hose must match the pipe diameter.
- E. Drive Unit Tower - The drive unit tower must be a four-legged structure designed to withstand the forces induced when traversing rough terrain and ridged row crops. The drive unit legs must be fabricated from minimum 1/4" x 3" x 3" angle. Two diagonal and six horizontal pre-galvanized braces must provide rigidity and strength to the drive unit. The horizontal base beam at the lower end of the structure must be constructed of minimum 6 5/8" O. D., 12-gauge (.109") pipe and must provide a wheelbase of 13.3 feet.
- F. Drive Unit Attachment - The fixed pipe of each span must be constructed of one piece of tubing. No stub pipe assemblies must be used. Drive unit legs must be attached to the one piece fixed or last pipe assembly to minimize the number of flanged connections on each span.
- G. Tower Supports - Two, minimum 2.875" O.D. 14-gauge (.083") pre-galvanized tubular tower support assemblies must be attached between the drive unit legs (Upper Brace connection) and pipeline attachment brackets. The tower supports must also be tied into the truss rods with a cross-channel member. This arrangement provides a unitized support structure to withstand tension and compression forces as the towers move around the field on level and rolling terrain.
- H. Structural Component Finish - All critical structural members, including the pipe, must be hot dip galvanized per ASTM A123-14 on all surfaces, with the exception of the various small components, including the tower box alignment bar, which must be painted or plated. The alignment bar must be constructed with a stainless-steel threaded rod and stainless nut to ensure positive tower alignment adjustment can be accomplished.
- I. Fasteners - All bolts must be Grade 5 minimum. Locknuts must be used in all structural assemblies. All fasteners must be plated for corrosion protection.

2.3 DRIVE TRAIN

- A. Center Drive - The center drive shall use a high efficiency; totally enclosed irrigation duty motor directly coupled to a double reduction gearbox with stainless steel stator bolts. Steel heat treated helical gears shall be used for maximum efficiency and strength. The motor housing shall be finned aluminum to provide additional cooling for longer life. The complete unit must be designed to operate under extreme environmental conditions and must be CSA and UL certified. The center drive motors must be minimum 0.6 hp (UL rating 0.8 hp) and/or minimum 1.2 hp (UL rating 1.6 hp) with a thermal sensitive device to protect the motor against excessive current or heat. One (1) motor at each

drive unit provides input power to the two (2) wheel gearboxes and must operate at 1,800 (4-pole) or 3,600 (2-pole) RPM for standard and high speed respectively. The motors must be rated at 1,100 in-lb torque with a 1.3 service factor (continuous rating 1,400 in-lb) and 6,800 in-lb starting torque. Amp draw must be 1.1 (0.6 hp) and 1.8 (1.2 hp). The cart and the last drive unit must utilize worm drive center drive electric motors. These must be totally enclosed irrigation duty, and capable of operating under extreme environmental conditions. The center drive motors must be 1.5 hp with a thermal sensitive device to protect the motor against excessive current or heat. One (1) motor at each drive unit and two (2) 1.5 hp motor at the cart provides input power to the wheel gearboxes. The nameplate amp draw must be 2.55 amps.

- B. Wheel Gearbox – The wheel drive gearboxes shall be a self-locking worm gear design to provide positive braking. The cast iron worm wheel and integral ductile worm input shaft uses a 25-degree pressure angle design for full recessed action and proper lubrication. The worm and bearings must operate in a submerged oil bath. The system must be equipped with heavy duty gearboxes (52:1 gear ratios) with a rating of 30,000 in.-lbs. continuous output torque for a minimum of 300 operating hours, and capable of withstanding 90,000 in.-lbs. instantaneous output torque without failure. The output shaft of the wheel gearbox must be a minimum 2 1/4" diameter, stress relieved, cold drawn steel. The seal area of the input shaft must be hardened to 30 RC minimum and double lipped oil seals must be used. The drive shaft shall be adequately shielded to meet OSHA safety standards. All gear reducers must be properly filled with lubricants by the manufacturer. Visual inspection of the lubricant must be provided by removal of the access cover.
- C. Gearbox Oil – The gearboxes, as shipped, must be filled with oil to its normal operating level and hermetically sealed with a rubber diaphragm and 15.86 cubic inch expansion chamber cap assembly. The original lubricant must meet SAE 85/140 class 5 oil specifications. Replacement lubricants must meet manufacturer's specifications.
- D. The drive shafts shall be designed to withstand the maximum torque of the drive train with no permanent deformation and must be 7/8" square cold drawn steel. The drive shaft must be adequately shielded to meet OSHA safety standards. Greaseless U-joints must connect the drive train components. The U-joints must incorporate flexible urethane inserts to absorb shock from motor starts and stops and reduce stress. Urethane inserts anchored between cast aluminum yokes, must be attached to drive shafts with four (4) 1/4" cap screws.
- E. Wheels must have an R-1 agricultural traction tread tire. Traction lugs must be a minimum 1" deep and a minimum 1" wide. Each 14.9" x 24" x 4 ply agricultural tire must be mounted on a 12" x 24" rim. The rims must be hot dipped galvanized in accordance to ASTM 123.

2.4 GUIDANCE

- A. Below ground guidance shall be used to guide the linear across the field. This shall be accomplished by utilizing a single wire rectangular lay-out loop that bisects the field on one leg and continues around the end and side of the field to form a return leg. A solar panel shall generate power (collected and stored in a dual battery pack) that activates an oscillator to deliver the cart guidance signal that is carried by the wire loop. The signal emitted from the buried wire shall be detected by the antennae assembly and used to guide and monitor position of the linear unit. Five antennae are installed on a tubular assembly suspended from the truss rods and mounted in the middle of the free-standing span. Two safety and one reference antennae are located in the middle of the tube and one forward and one reverse steering antenna are installed on opposite ends of the mounting tube assembly. The reference antenna is positioned directly above the buried wire monitoring its signal. As either the forward or reverse steering antenna moves to the left or right of the buried wire it must become "in phase" or "out of phase" in relation to the reference antenna and cause the system to steer back onto the wire. The two safety antennae are located on each side of the buried wire. As long as the wire stays in between these two antennae the system must continue to run. Should one or the other safety antennae cross over the wire, the safety circuit must be open, and the linear system must shut down. A central pulse box ensures the end of the leading end of the linear system must be intermittently "pulsed" to move thus avoiding an abrupt steering correction and development of excess tension or compression forces.

2.5 CONTROL PANEL

- A. Linear control panel shall be provided with the system. The essential characteristics must include:
 - 1. Start/stop
 - 2. Change speeds or depth of application
 - 3. Direction control, forward or reverse
 - 4. Position in the field display
 - 5. Programmable end gun controls
 - 6. Programmable functions by field position, time, date, and external inputs
 - 7. Programmable application rate by field position

8. Digital voltage display and low voltage shut down
 9. Advanced diagnostics for easy trouble shooting
 10. 10-inch full color touchscreen display
 11. Pump start/stop
 12. Bypass switch for engine run/start
 13. Stop-in-slot bypass
 14. Wet and dry digital hour meter
 15. Auto reverse/auto stop
 16. GPS position ready
 17. Remote monitoring and control enabled
 18. Variable rate irrigation capable
- B. The main linear control panel shall be constructed to meet or exceed the standards for a National Electrical Manufacturers Association Type 3R enclosure. All operator controls shall be protected from the elements by an outside door. The main panel must also be provided with latches to accommodate a padlock. 480-volt, 3-phase, 4-wire, 60-cycle electrical power shall be furnished to the main control panel at the appropriate amperage to match the linear requirements. The linear panel must be rated for 30 or 45 amps depending upon the total linear amperage requirements based upon the number of spans, drive motors, and end gun booster pump as calculated by dealer. All wiring must be color coded.
 - C. The main linear control panel shall include functional capability for starting/stopping, speed/depth of water applied, start/override button, forward-stop-reverse, 480/120 control transformer, voltmeter, fuses, and main disconnect switch. Diagnostic display must identify cause for pivot shutdown from control panel, towers, or end tower. Each linear shall be equipped to automatically restart itself in the event of a power interruption, up to three (3) seconds in duration, and to shut itself down if the pivot fails to move for a pre-selected time interval. Units shall be grounded in accordance with the NEC Article 250, Section H.
 - D. The main linear panel can be equipped with auxiliary contacts which shall interface with auxiliary equipment. However, safety circuit wire and main power cable are to be supplied and installed by supplier/contractor.

2.6 POWER SUPPLY TO THE LINEAR CART

- A. Three-phase, 60-hertz, 440/480 VAC power must be delivered to the linear cart unit via an 1,800 RPM, Tier-4, diesel engine and 15 kilowatt (kW), 60-hertz, three-phase, generator and four-conductor (three power plus ground) 8-gauge, Type W, 600 Volt, 90 degree C Rating cable.

2.7 ELECTRICAL

- A. The system electrical circuits must operate from a 440/480-volt, three-phase, 4-wire power (with ground) source with a step down 120 VAC transformer for the seven conductor 120-volt, VAC., single-phase control and safety circuits.
- B. The main power cable from the cart control panel to the tower boxes must be 12 conductors with a minimum 12-gauge stranded copper wire. All exposed wiring must be bundled and jacketed with a black, U.V. stabilized vinyl cable jacketing material.
- C. The main control panel and individual tower boxes shall be constructed to meet or exceed the standards for a National Electrical Manufacturers Association (NEMA), Type 3R enclosure. All operator controls shall be protected from the elements by an outside door. The main panel must also be provided with latches to accommodate a padlock. Thirty (30) ampere, 480-volt, three-phase, 4-wire, 60-cycle electrical power must be furnished to the main control panel. All wiring must be color coded.
- D. The electrical alignment system shall consist of two (2) micro-switches, one (1) for control (alignment) and one (1) for safety shutdown. Span to span alignment is maintained through modified alignment that senses the angle of deflection through a mechanical linkage arrangement to the cam assembly that opens or closes the micro-switches for either run/stop or safety out functions.
- E. Integral, thermal sensitive automatic reset overload protection shall be provided for all 480-volt motors. A suppresser circuit shall be provided in each tower control box to reduce arcing at contacts.
- F. Electric irrigation systems must be designed and manufactured according to the National Electrical Code (NEC) Article 675, including:
 1. Article 430 - motors, motor circuits and controllers
 2. Article 250 – grounding
 3. Article 240 - overcurrent protection
 4. Article 310 - conductors for general wiring
- G. Electric irrigation equipment is designed and manufactured according to NEC Articles 675, 430, 250, 240, and 310.

- H. Equipment is also designed to meet the conditions outlined in ASABE Standard: ASABE S362.2. This standard covers all electrical equipment, apparatus, component, and wiring necessary for electrically driven or controlled irrigation machines from the point of connection of electric power to the machine. Other Standards cited are: ASABE S318, ASABE SAE J284, ANSI Z535, NEMA ICS 1, and NFPA No. 70.
- I. The linear sprinklers shall be equipped with the required controls to cause pump-shut down in case of a linear system malfunction.
- J. Features listed below shall be included to provide additional capability for the system
 - 1. Below ground guidance
 - 2. Solar powered oscillator pedestal
 - 3. 2 - Soft hose hydrant connection
 - 4. 14 – 39’x 6.625” polyethylene hose
 - 5. Hose management bumpers
 - 6. Traction weight rack
 - 7. Concrete weight
 - 8. Pressure transducer for low pressure shutdown
 - 9. End of field stop barricade (2) with auto reverse
 - 10. Running light
 - 11. High Voltage Surge Protection
 - 12. Motor Covers
 - 13. Span Drain with Tee for Drop
 - 14. GPS for VRI Position

2.8 WATER DISTRIBUTION

- A. 360-degree spray nozzles with flat-grooved pads must operate at a minimum 15-psi at the distal end of the machine and apply water at a minimum of 7 gpm/ac. Pressure regulators rated at 15-psi must be used on each sprinkler.
- B. The sprinklers must be attached to hose drop tubes via galvanized gooseneck couplers and discharge water approximately 90 inches above the soil surface. Slip weights must be provided.
- C. The 3/4-inch sprinkler outlets must be mounted on top of the pipeline and spaced at a maximum 108 inches apart.
- D. Water shall be delivered from water source to inlet of linear system on the cart structure via 6.625” O.D. polyethylene hose. Lengths of hose shall be provided for cart structure to drag from various underground risers along field. The linear unit shall be equipped with end of hose shut down to prevent damage to the flexible water hose as it nears the end of the maximum travel length.

2.9 VARIABLE RATE IRRIGATION (VRI) ZONE CONTROL TO BE INCLUDED WITH SYSTEM

- A. VRI uses a water prescription, developed for a linear, to apply varying water depths across the field.
- B. The prescription is developed using VRI Software, developed by irrigation equipment manufacturer. This is a software program that allows a user to bring in different data (soil maps, topographic data, crop yield, etc.) to develop a water prescription based on the criteria the user decides.
- C. Uses control panel to control management zones along the length of the linear.
- D. Control panel allows VRI Zone Control to be part of the linear machine.
- E. By using the control panel, the VRI Zone Control shall take into consideration the complete linear machine and all its aspects.
- F. This must allow pressure safety to be taken into effect across the machine.
- G. 15-volt VRI tower boxes must be situated along the length of the machine according to the customized design.
- H. 120-volt electronic solenoids must actuate in accordance with the prescription to pulse the management zones across the center pivot to achieve the desired application depth for each defined zone.
- I. The individual management zones must be made up of banks of sprinklers controlled by automatic valves on each sprinkler on the machine.
- J. The placement and number of zones shall be customized according to the machine and field characteristics.
- H. An air compressor mounted on the linear may be used to control the automatic valves. The valves are typically open and close with the use of water but controlling the valves by compressed air shall prevent any failure of the valves from opening and closing due to potential solids in the water.
- I. All the equipment shall be run using the control panel for storing and running the prescription. VRI Zone Control is a positioned based product which uses GPS to determine where and when to apply the certain water application depths.
- J. Linear VRI Specs:
 - 1. VRI zones – 12 (allowing 3 zones per span)

2. 6 VRI tower boxes (2 zones per box)
3. Each VRI zone is approximately 69 feet in length
4. Automatic valves for each sprinkler drop.

PART 3 - MISCELLANEOUS

3.1 SERVICE

- A. The supplier must either be a certified dealer or use a certified dealer who shall install and provide warranty support for the equipment provided by the manufacturer. All costs must be included in bid price.

3.2 TRAINING

- A. The supplier shall provide on-site training to the operators regarding operation of the linear equipment. All costs associated with onsite training must be included in bid price.

3.3 INSTRUCTION MANUAL

- A. One (1) copy of the Owner's Manual shall be inserted inside the door of the main control panel.

3.4 SUPPLIER RESPONSIBILITY

- A. The linear irrigation system supplier shall supply all equipment called for in this specification.
- B. The supplier of the linear irrigation equipment shall be responsible for the erection the irrigation equipment with one or more factory trained personnel. This shall include assembly of the mechanical portion of the linear sprinkler systems, and start-up and adjustment of the equipment. This portion of the manufacturer's responsibility shall be concluded when the linear system has been operated continuously for one (1) field cycle (forward and reverse trip).
- C. It is the intent of this specification for a complete and operating linear irrigation system as specified be provided.
- D. Must include all underground pipe network, risers and connections (or equivalent) from the dedicated well to accommodate the walking distance. A fully functional system is required.

3.5 DELIVERY REQUIREMENTS:

- A. FOB Destination shipping. Delivery and installation cost must be included in the bid. Delivery is to be made to the Red River Research Station at 262 Research Station Dr., Bossier City, LA 71112. See Figure 1 in Part 5 for location of placement of linear walker.

3.6 COMPLETION TIME

- A. The project must commence within 30 days of Purchase Order.
- B. The project must be completed within 120 days of commencement.
- C. The supplier must provide at least one year of full warranty, parts and labor, beginning after project completion to ensure acceptable operation of the system.

3.7 PAYMENT TERMS:

- A. LSU is constitutionally prohibited from paying deposits. Payment terms are net 30 days and the total cost of the walker and delivery will be paid upon receipt of items. Installation and commissioning will be paid upon completion to ensure the system is working properly and meets the needs of the Red River Research Station.

PART 4 - REFERENCES

4.1 REFERENCES

- A. American National Standards Institute:
 1. ANSI Z535 - Specification for Accident Prevention Signs
- B. American Society of Agricultural and Biological Engineers:
 1. ANSI/ASAE S397.4 - Electrical Service and Equipment for Irrigation (R2024)
 2. ASABE S362.2 – Wiring and Equipment for Electrically Driven or Controlled Irrigation Machines
 3. ASABE S318 - Safety for Agricultural Equipment
 4. ASABE SAE J284 - Safety Alert Symbol for Agricultural Equipment
- C. ASTM International:
 1. ASTM A123-14: Standard Specification for Zinc (Hot Dip Galvanized) Coatings
- D. National Electrical Code:
 1. Article 675 - electrically driven or controlled irrigation machines
 2. Article 430 - motors, motor circuits and controllers
 3. Article 250 – grounding
 4. Article 240 - over current protection

- 5. Article 310 - conductors for general wiring
- E. National Electrical Manufacturers Association:
 - 1. NEMA ICS 1 - Controls and System
- F. National Fire Protection Association:
 - 1. NFPA No. 70 - National Electric Code

PART 5 - PLACEMENT LOCATION

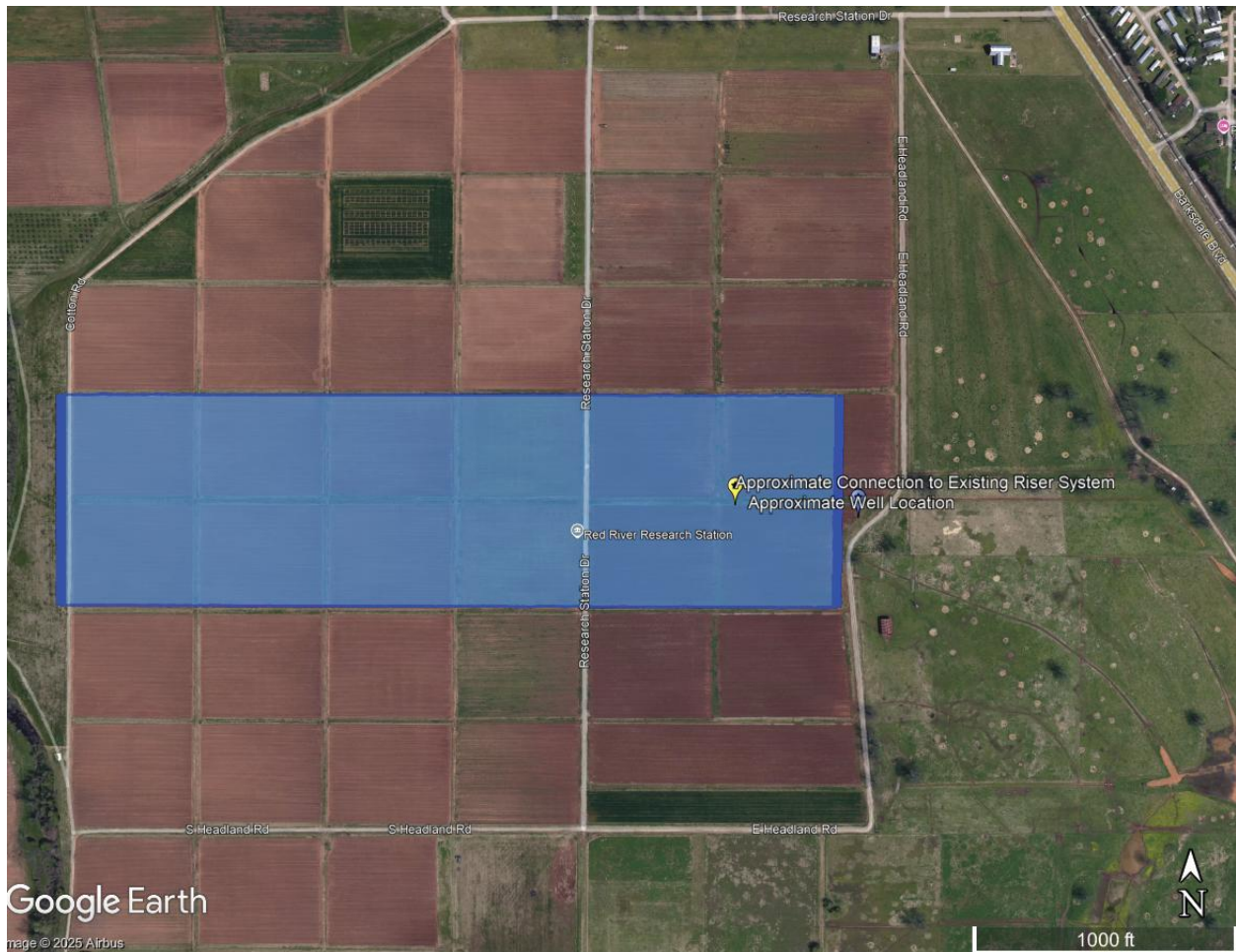


Figure 1. The blue area marked on the map of the Red River Research Station is the expected irrigated area for the linear move irrigation system based on the path of the old infrastructure.



Insurance Minimum Limits and Requirements for Standard Contractor/Vendor Agreements

INSURANCE

The Board of Supervisors of Louisiana State University and Agricultural and Mechanical College (henceforth referred to as "University") requires contractors/vendors to procure the below minimum limits. The insurance must be maintained for the duration of work performed for or on behalf of the University, and for the length of any agreement with the University. Failure to maintain the required insurance throughout the term of the Agreement shall be a material breach, and shall entitle University to all remedies provided for in the Agreement, or by operation of law. The minimum insurance requirements described herein do not in any way limit the contractor/vendors' financial responsibilities as outlined in the agreement's Indemnification requirements. Therefore, the contractor/vendor may opt to have broader coverage and limits to satisfy its financial obligations.

Workers' Compensation

Workers' Compensation insurance shall be in compliance with the laws of the state in which the company is domiciled. Employer's Liability shall be included with a minimum limit of \$1,000,000 per accident/per disease/per employee. If Contractor/vendor is exempt from workers' compensation or fails to provide appropriate coverage, then the Contractor/vendor is or agrees to be solely responsible and hold harmless the University for the injuries of any owners, agents, volunteers, or employees during the course of the agreement.

Commercial General Liability (CGL)

Commercial General Liability insurance shall be maintained on an "occurrence" basis, including property damage, bodily injury, products & completed operations, and personal & advertising injury with limits not less than \$1,000,000 per occurrence and \$2,000,000 aggregate on Insurance Services Office Form CG 00 01, ISO 2007 edition or equivalent.

Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per accident of \$1,000,000 on ISO form number CA 00 01 or equivalent. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned vehicles.

Excess Insurance

Umbrella or Excess insurance may be used to meet the minimum limit requirements for liability insurance.

Other Insurance Requirements

Additional Insured Status

The University is to be listed as an Additional Insured on the Commercial General Liability (must use an endorsement at least as broad as ISO Form CG 20 10 11 85 or both CG 20 10 and CG 20 37 forms with edition date 2004 if later revisions used). See *Verification of Coverage* section on how the University should be listed as an Additional Insured.

Waiver of Subrogation/Recovery

All insurances shall include a waiver of subrogation/recovery in favor of the University.

Primary Coverage and Limits of Insurance

For any claims related to work performed for or on behalf of the University or related to an agreement/purchase order, the contractor/vendor's insurance coverage shall be primary insurance as respects to the University. Any applicable insurance or self-insurance maintained by the University shall be excess of the Contractor/vendor's insurance and shall not contribute with it.

Subcontractors

Subcontractors of the Contractor/vendor shall be subject to all of the requirements stated herein. Contractor/vendor shall include all subcontractors as insureds under its policies or shall be responsible for verifying insurance coverages and limits and maintaining Certificates of Insurance for each subcontractor. The University reserves the right to receive from the Contractor/vendor copies of subcontractors' certificates.

Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions above \$25,000 must be approved by the University or reduced prior to the commencement of work. The University may require the Contractor/vendor to provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A- VII, unless otherwise approved by the University.

Verification of Coverage

The University shall be listed as Additional Insured and Certificate Holder as follows:

**The Board of Supervisors of Louisiana State
University and Agricultural & Mechanical College
213 Thomas Boyd Hall
Baton Rouge, LA 70803**

Certificates of Insurance shall be furnished to the University evidencing the insurance required herein including amendatory endorsements. The University's failure to obtain the required documents prior to the work beginning or acceptance of a non-compliant certificate shall not waive the Contractor/vendor's obligation to have in place the required insurances or to provide the certificate. The University reserves the right to require certified copies of all the insurance policies, including endorsements.

Special Risks or Circumstances

LSU reserves the right to consider alternate coverage or limits and to modify these requirements, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.



Insurance Minimum Limits and Requirements for Standard Supplier Agreements (no services to be performed)

The Board of Supervisors of Louisiana State University and Agricultural and Mechanical College (henceforth referred to as "University") requires contractors/vendors to procure the below insurance. The insurance must be maintained for the duration of work performed for or on behalf of the University, and for the length of any agreement with the University. Failure to maintain the required insurance throughout the term of the Agreement shall be a material breach, and shall entitle University to all remedies provided for in the Agreement, or by operation of law. The minimum insurance requirements described herein do not in any way limit the contractor/vendors' financial responsibilities as outlined in the agreement's Indemnification requirements; therefore, the contractor/vendor may opt to have broader coverage and limits to satisfy its financial obligations.

Workers' Compensation

Workers' Compensation insurance shall be in compliance with the laws of the state in which the company is domiciled. Employer's Liability shall be included with a minimum limit of \$1,000,000 per accident/per disease/per employee. If Supplier is exempt from workers' compensation then the Supplier is or agrees to be solely responsible and hold harmless the University for the injuries of any owners, agents, volunteers, or employees during the course of the agreement.

Commercial General Liability (CGL)

Commercial General Liability insurance shall be maintained on an "occurrence" basis, including property damage, bodily injury, products & completed operations, and personal & advertising injury with limits not less than \$1,000,000 per occurrence and \$2,000,000 aggregate on Insurance Services Office Form CG 00 01, ISO 2007 edition or equivalent.

Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per accident of \$1,000,000. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned vehicles.

Excess Insurance

Umbrella or Excess insurance may be used to meet the minimum limit requirements for liability insurance.

Other Insurance Requirements

Additional Insured Status

The University is to be listed as an Additional Insured on the Commercial General Liability policy.

Primary Coverage

For any claims related to an agreement/purchase order, the suppliers' insurance coverage shall be primary insurance as respects to the University. Any applicable insurance or self-insurance maintained by the University shall be excess of the supplier's insurance and shall not contribute with it.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A- VII, unless otherwise approved by the University.

Special Risks or Circumstances

LSU reserves the right to consider alternate coverage or limits and to modify these requirements, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.