

**SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY
SANFORD UNDERGROUND RESEARCH FACILITY
(SURF)
LEAD, SOUTH DAKOTA**

**Scope of Work
LZ Davis Campus Infrastructure Improvements**

RFP Posted:	October 25, 2017
Site Visit:	November 8, 2017 8:00 A.M. (RSVP by November 6, 2017)
Questions Posted	November 13, 2017 2:00 P.M.
Questions & Answers Posted	November 18, 2017 2:00 P.M.
Proposal Due Date:	November 22, 2017 2:00 P.M.

The South Dakota Science and Technology Authority (SDSTA) is seeking proposals for LZ Davis Campus Infrastructure Improvements at the Sanford Underground Research Facility (SURF), located in Lead South Dakota. Documents included in this Request for Proposal include:

- A. Request for Proposal (RFP)
- B. Draft contract (2017-17)
- C. Draft Construction General Conditions Agreement
- D. LZ Davis Campus Combined Drawings
- E. LZ Davis Campus Specification
- F. Bid Security Form (to be submitted with proposal)
- G. Payment and Performance Bond Form (informational - to be submitted with contract)
- H. Contractor Pre-Qualification & EHS Questionnaire

1.0 Background

- 1.1 SURF, in Lead, South Dakota, is the planned location for assembly and operation of a Generation Two (G2) direct dark matter detector. SURF is located at the site of the former Homestake Gold Mine, which is no longer an active mine.
- 1.2 The G2 detector will be designed and built by the LUX-Zeplin (LZ) Research Collaboration, a multi-national research group.
- 1.3 Modifications to the Davis Campus infrastructure are required to support installation, and operation of the LZ detector.
- 1.4 The supply and installation of a Radon Removal System (RRS) will be performed under a separate contract. This installation will not be performed until the RRS room outfitting has been completed. However, the successful bidder will be required to coordinate final utility connections with the RRS supplier to ensure its successful operation.

- 1.5 The supply and installation of the backup generator will be performed as an option to the Contract. The successful bidder will provide installation of the room and facility infrastructure up to the transfer switch and a line item estimate for backup generator supply and installation.
- 1.6 Facility location descriptions:
 - 1.6.1 The Davis Campus is an Underground Lab that is situated nearly 5,000 ft below the surface at the Sanford Lab. Construction of the Lab took place between 2010 and 2012. The Lab currently operates one core experiment: the Majorana Demonstrator experiment. The LUX experiment was recently completed and decommissioned. The LZ experiment is intended to operate within the experimental space previously occupied by LUX experiment. In order for the LUX experiment to operate, modifications and improvements to Facility infrastructure are required.
 - 1.6.2 It is expected that the Majorana Demonstrator experiment will be in operation during the construction activities for the LZ Infrastructure upgrades. Careful coordination will be required to ensure that impact to the operation of this experiment will be minimized.
 - 1.6.3 Access to the Davis Campus is through the Yates Shaft. The Yates Shaft is a timbered shaft with conveyances that are operated by hoists which provide access to the underground for personnel, materials and equipment.
- 1.7 While this RFP is issued by SURF through the South Dakota Science and Technology Authority (SDSTA), the final customer for this design effort is the LZ Collaboration. Mr. John Keefner will act as the Owner's Representative to manage the Construction Contract. Mr. David Taylor, SDSTA Mechanical Engineer, is the on-site representative for the LZ Collaboration and will coordinate all LZ participation in the construction process and address technical questions. Leo A. Daly (LAD) is the Engineering firm responsible for the detailed design and specifications.

2.0 Scope of work for Davis Campus Infrastructure Construction Services

- 2.1 In general, the Scope of Work includes all construction associated with modifications to the existing Davis Lab, construction of a new Radon Removal System room, new Xenon Storage room as well as the construction of a new Backup Generator room to support the operation of the LUZ-Zeplin (LZ) experiment. The specific disciplines include:
 - 2.1.1 Demolition of existing infrastructure as required to support installation of new infrastructure to support the LZ experiment
 - 2.1.2 Electrical Systems including all equipment, cables, cable trays, conduits, lighting, receptacles, Stand-by Generator and associated equipment
 - 2.1.3 HVAC Systems including Fans, Ducting and Ducting modifications, Insulation and associated chilled water piping
 - 2.1.4 Plumbing and Fire Suppression Systems including all Water Supply and Drainage systems, Piping, Valves, Sprinklers, Compressed Air Lines, and associated fittings

- 2.1.5 Communication, Controls and Monitoring Systems including Temperature and HVAC Controls, Telephone and Data Systems
 - 2.1.6 Fire Detection and Alarm Systems
 - 2.1.7 Structural and Architectural Systems including MEP supports, Mezzanine, Work Deck, Ladder ways, Fire Separation Walls and Doors, monorail relocation and installation
 - 2.1.8 Systems Integration and Commissioning – general contractor and all sub-contractors to coordinate with a third-party commissioner
- 2.2 The construction is to be performed according to the construction documents prepared by LAD. The various tasks associated with the construction documents (See PDF LZ Davis Campus Combined Drawings).

2.2.1 Perform all construction according to the Construction Specifications as listed in the following document:

2.2.1.1 ESH #1 – Major Construction 2015 12 01 Rev

2.2.1.2 LAD Technical Specifications – SURF 006 -LZ Davis Campus 100
Specification Surf v1_5 102017

2.3 General Construction Services for Davis Infrastructure are to include the following, at a minimum:

- Management of Self Performed Work
- Sub-Contractor Management and coordination
- Coordination with Radon Reduction System Installation contractor and any other Owner procured contractor
- Coordination with the Owner on all on site activities
- Coordination with Leo A. Daly, the A&E for the Infrastructure Improvements
- Permit preparation, application, and acquisition
- Contract Administration
- Material and equipment acquisition (including incorporation of long-lead items and identification of possible impact to schedule)
- Inspection and quality control (including any material testing required)
- Site Surveying for Civil Construction
- All layout work required to perform the work
- As-built survey for acceptance and record purposes
- Training for operation and maintenance
- As-built drawings, Record drawings and Operations Manuals
- Participation with project commissioning/closeout requirements

2.4 Responsibility Checklist

2.4.1 A breakdown of Owner and Contractor responsibilities is shown in Appendix B

2.5 Construction Schedules

2.5.1 A CPM Construction Schedule is to be provided no later than one week from award of contract and is to conform, at a minimum, to the project completion dates. The schedule is to be prepared in Microsoft Project and updated monthly comparing actual with forecasted task durations. Both the updated CPM Construction schedule is to be provided with the invoice. The three weeks “Look

ahead” schedule is to be provided to the Owner the day before the scheduled weekly construction meeting.

2.6 Meetings

- 2.6.1 The Contractor will attend meetings with the SDSTA every week during construction. The SDSTA will take the minutes of the meetings and provide to all participants. This weekly meeting will take place on site but will be set up as a teleconference to enable remote attendees to participate. The attendance of the Contractor Superintendent is mandatory

2.7 Coordination

- 2.7.1 Coordination and cooperation with LAD, SDSTA, and LZ Collaboration staff will be required.

2.8 Permitting

- 2.8.1 The Contractor will procure and manage all permitting and inspections necessary for the construction process up to and including an occupancy permit City of Lead.

3.0 UG Site description

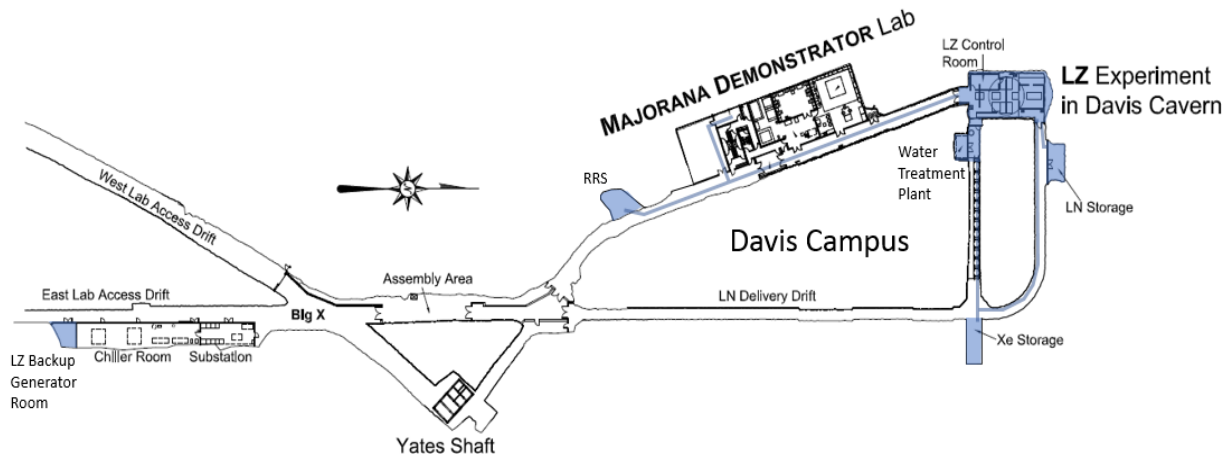


Figure 1 – Davis Campus

- 3.1 Location – Davis Campus is located at the 4850-level of the facility at latitude 44-deg, 21-min N and longitude 103-deg, 45-min W, Lead, SD. The 4850 level of the facility is estimated to be 375-380 ft. above sea level. Davis Cavern is at the far north end of the Davis Campus (refer to Figure 1).
- 3.2 Access – The Yates Shaft provides access to the Davis Campus via the South cage. Cage size is 8' 5-1/2" high x 4' 8 1/2" wide x 12' 4-1/2" deep. The Cage capacity is 10,000 lbs. Cage travel time from the surface to the 4850 L is approximately 10 mins. The Yates shaft provides access to the Davis Campus 4 days per week between the hours of 6:30 am and 5:30 pm
- 3.3 Environments – All 4850-level areas near the Yates Shaft are near 25° C with humidity approaching saturation. Due to relatively low air flow in the drift to the LN Storage Room,

temperatures go up gradually as air picks up heat from the rock walls. Areas inside the Majorana Lab and Davis Cavern are climate controlled with HEPA filtered air at 20-23° C at approximately 50% relative humidity. Three air handlers for the space are located in room 104, Davis Campus. AHU 1 provides air for the cleanroom that is to be dismantled. AHU 2 provides air to the Davis Cavern and common spaces in the main access corridor along with locker and toilet areas. AHU 3 provides air to the Majorana Lab.

- 3.4 Utilities – The Davis Campus is serviced by 2 ea. 50-ton chillers. AHU-2, servicing the Davis Cavern and Common Corridor is rated at 22.7-tons of cooling. Electrical power for Davis Campus is via substation rated at 1500 kVA with common facilities connected load of 1100 kVA. Potable, industrial, and chilled water are available as is compressed air.

4.0 Proposal Requirements

Your proposal should be provided in digital format as a pdf file with standard letter size format. Please note there is a 30-page limit for your response to proposal requirements. Proposals must contain the following:

- 4.1 Contact information, including an email address, for the Contractor's designated contact person who can receive and distribute RFP information.
- 4.2 Contractor description and evidence of qualifications to address the scope described in this document. Provide three examples of projects performed that demonstrate the qualifications and competence for each of the disciplines/requested areas of expertise. Provide contact information for three client references.
- 4.3 Resumes for all key project staff to include:
 - 4.3.1 Experience with similar relevant projects.
 - 4.3.2 Qualifications, including training and certification
- 4.4 Description of your management and communication process for working with SDSTA on this project. Provide a description of your safety program and quality control (QC) program (safety and QC manuals will not be included in the 30-page limit). Explain how your safety and QC programs will be implemented for this project.
- 4.5 Safety records for the past three years (incident/injury records, OSHA 300 logs and EMR data)
- 4.6 Exception to the draft contract or other RFP materials. Disclose any existing relationships and previous work with SDSTA/Sanford Lab.
- 4.7 Description of your company's approach to cost and schedule control. What tools do you use, and how do you communicate the information to the project team and client?
- 4.8 Work plan and schedule for completing all scope including expected durations for tasks and relevant details that define your work process.
- 4.9 Provide a detailed fixed price fee proposal for services broken down by task as outlined in the work plan and schedule.

- 4.10 Bid security for the scope must accompany the proposal if the bid exceeds \$50,000 (as described in 5.8 below). Bid bond documents will not count against the 30-page proposal limit.

5.0 General Requirements

- 5.1 The selected Contractor will be required to abide by all applicable federal, state and local laws and ordinances, as amended for time to time. Including, but not limited to, the applicable local laws and ordinances.
- 5.2 The SDSTA may at its sole and absolute discretion reject any and all or parts of any and all submissions; re-advertise this solicitation; postpone or cancel at any time this solicitation process; or waive any irregularities in this solicitation or in the submittals received as a result of this solicitation.
- 5.3 All expenses involved with the preparation and submission of materials to the SDSTA, or any work performed in connection therewith, shall be borne by the Offeror(s). No payment will be made for any responses received, nor any other effort required of or made by the Offeror(s) prior to commencement of work as defined by a contract approved by SDSTA.
- 5.4 The materials will be evaluated by the Selection Committee appointed by the SDSTA. The Selection Committee will recommend an Offeror by consensus based on the Selection Criteria describe in this RFP.
- 5.5 The SDSTA reserves the right to enter contract negotiations with the selected Offeror. If the SDSTA and the Offeror do not agree to terms of a Contract, the SDSTA may elect to terminate negotiations and begin negotiating with the second-ranked Offeror and so forth. This process will continue until a contract has been executed, or all submittals have been rejected. No Offeror shall have any claims and/or rights against the SDSTA arising from such negotiation and/or the qualification process.
- 5.6 The SDSTA reserves the right to contract for all or part of the work program described in the RFP.
- 5.7 Offeror(s) submitting materials should not submit any information in response to this solicitation which the Offeror(s) considers to be a trade secret or confidential. The submission of any information in connection with this solicitation shall be deemed conclusively to be a waiver of any trade secret or other protection, which would otherwise be available to the Offeror. In the event that the Offeror submits information in violation for this restriction, either inadvertently or intentionally and clearly identifies that information in the submission as protected or confidential, the SDSTA will endeavor to redact and return that information to the Offeror. The Selection Committee will then evaluate the balance of the submission. The redaction or return of information pursuant to this clause may render a submission nonresponsive.
- 5.8 Bid security: Bids over \$50,000 must be accompanied by a bid security as follows:
- Bid Bond: A bid bond of ten percent (10%) of the total amount of the bid including all add

alternatives, shall be furnished by the Contractor. A form of Bid Bond is included with the proposal documents.

- **Certified Check or Cashier's Check:** In lieu of a Bid Bond, a certified check or cashier's check for five percent (5%) of the amount of the bid, including all add alternates, may be furnished. Such check shall be certified or issued by either a state or national bank and payable to the South Dakota Science and Technology Authority.
- **Payment and Performance Bond:** Upon award of contract, Contractor shall provide a Payment and Performance Bond produced by a South Dakota licensed insurance producer (agent) and issued by a South Dakota licensed surety in an amount not less than the amount of the awarded contract. The Payment and Performance Bond surety or sureties shall meet all requirements of South Dakota law. This bond is to secure the faithful performance of the contract and the payment of those to whom the offeror may become legally indebted for labor, materials, tools, equipment, or services of any kind used or employed by the offeror in performing the work. The surety bond shall be on a form similar to the form of Payment and Performance Bond with the bid in the time state shall be cause for consideration by the Owner of awarding the contract to another responsible and responsive offeror, and retention of the bid deposit.
- **Power of Attorney:** Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

5.9 **Liquidated Damages:** If Offeror fails to complete acceptance and commissioning for the construction project with in the time frame (January 1, 2018 - April 27, 2018) as noted in this RFP, Offeror shall be liable for liquidated damages in the amount of \$50 per day for contract values up to \$500,000 and an additional \$10 per day for each \$100,000 of value beyond \$500,000 as provided in Section 9.3.7 of the Draft Contract. Substantial completion does not include final RSS utility connections as those tasks may be delayed beyond the April 27, 2018 time frame.

6.0 Selection Criteria

The SDSTA will review all submitted proposals for adherence to this request's requirements and capabilities to identify the proposal providing the best value based on the following criteria:

1. Experience with similar projects
2. Qualifications of project personnel
3. Project understanding and responsiveness
4. ESH Program and Injury Experiences
5. Cost reasonableness

7.0 Selection Process

1. SDSTA will form a selection panel that will review the responses received to this RFP.
2. SDSTA will make a selection based on the submittals or, at our discretion, may ask a short list of offerors to interview prior to finalizing the selection.
3. Offerors will be notified of the selection decision by email within three weeks of the receipt of proposals.
4. Selection decisions are final. There will be no process for appeal or re-evaluation.

8.0 Submission Requirements

All offerors are required to attend an onsite pre-proposal conference November 8th, from 8:00 a.m.-12:00 p.m. MT at the Sanford Lab, 630 East Summit Street, Lead South Dakota. Pre-registration is required, email mbaumann@sanfordlab.org by close of business November 6th to receive instructions and directions. Only companies represented at the pre-proposal conference will be eligible to submit proposals. Contractors' subcontractors are encouraged, but not required, to attend. Contractors will be responsible for communicating requirements and specifications to their subcontractors.

Questions are to be submitted electronically to mbaumann@sanfordlab.org by 2:00 P.M. November 13, 2017. All questions along with their answers will be emailed to all prospective offerors and posted to the sanfordlab.org website no later than November 18, 2017.

Offerors shall submit an electronic copy (.pdf format) of the proposal no later than 2:00 p.m. November 22, 2017, to: mbaumann@sanfordlab.org. Late submissions will not be accepted.

The proposal period may be extended at the discretion of SDSTA based on the quantity and/or complexity of questions. Any notices of extension of time to respond will be distributed to all prospective offeror by SDSTA.

All communications regarding this procurement between RFP release and contract award shall be directed by email to mbaumann@sanfordlab.org. Communications with other SDSTA staff regarding this procurement in advance of the contract award are not allowed.

APPENDIX A
Responsibility Checklist

Item	Contractor	Owner
All Labor, Supervision, Materials and Equipment to perform the Work	x	
Designated Safety Officer at the Work Site for all Work	x	
Guide	x	
Guide Training		x
Access to Site		x
Training for Site Specific Safety Requirements		x
Electricity for Construction		x
Building Permits	x	
Waste Disposal	x	
Shaft haulage coordination	x	
Shaft haulage approval		x
Shaft haulage		x
Onsite Salvage Storage		x
Access Badges		x
Water for Construction		x
Potable Water for Construction Workers	x	
Toilet Facilities		x
OHSA Training	x	
JHA Preparation	x	
JHA Review		x
Off Loading of Contractor provided material	x	
Parking for Contractor personnel		x
Forklift for Off Loading Contractor Material		x
Progress and Completion Pictures	x	
Office Space		x
Telephone	x	
Access to Internet		x
PPE	x	
Cap Lamps for Underground use		x
All Surveying required to perform the work and generate as-built and record drawings	x	

Coordination with City of Lead Building Inspector to perform work	x	
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