Request for Information (RFI) EXC Subcontractor Long-Baseline Neutrino Facility Lead, South Dakota

Troy Lark
LBNF Procurement Manager

LBNF Project Office
P.O. Box 500, MS 123
Kirk Road and Pine Street
Batavia, Illinois 60510-5011
USA
Office: 208-419-6070
tlark@fnal.gov

SUMMARY

Under contract to the U.S. Department of Energy (DOE), the Fermi Research Alliance, LLC (FRA) is leading the Long-Baseline Neutrino Facility (LBNF) Project to enable a world-class program in neutrino physics. Specifically, the LBNF Project (http://lbnf.fnal.gov/) provides the infrastructure for a new high-intensity neutrino beam at Fermi National Accelerator Laboratory (Fermilab) aimed at large liquid argon-based neutrino detectors to be located nearly a mile underground at the Sanford Underground Research Facility (SURF) in Lead, SD. In close coordination with LBNF, the Deep Underground Neutrino Experiment (DUNE) will construct and install the liquid argon neutrino detectors planned for SURF.

BACKGROUND INFORMATION

DUNE (http://www.dunescience.org/) is a leading-edge, international experiment for neutrino science and proton decay studies. Discoveries over the past half-century have put neutrinos, the most abundant matter particles in the universe, in the spotlight for further research into several fundamental questions about the nature of matter and the evolution of the universe. DUNE is expected to achieve transformative discoveries by making definitive determinations of neutrino properties, examining the dynamics of supernovae that produced the heavy elements necessary for life, and probing the possibility of proton decay.

The LBNF Project will provide facilities to enable the world-class DUNE experimental program in neutrino physics. Specifically, LBNF will build a new high-intensity neutrino beam at the Fermilab aimed at the SURF, 1,300 km away, where it will build the surface and underground facilities necessary to support four massive neutrino detectors, each housed in cyrostats that can hold 17,600 tons of liquid argon each.

SURF occupies the site of the former Homestake Gold Mine, which was converted into an underground physics and materials science laboratory in the early 2000s. It is owned by the State of South Dakota and operated by the South Dakota Science and Technology Authority (SDSTA) which is currently executing an Early Science Program utilizing state funds for laboratory development and DOE funds for facility operations. SDSTA staff is comprised of technical, business, and operations personnel.

DOE will fund the LBNF Project for design and construction of the conventional facilities to house the far detector at the SURF location. Final design of the Excavation (EXC) and Building & Site Infrastructure (BSI) scope are at the 90% phase and 100% documents will be available in May 2019.

The LBNF Project is considering soliciting and awarding the EXC scope of work bid package as a sub-subcontract under the current Construction Manager / General Contractor (CM/GC), Kiewit/Alberici Joint Venture (KAJV).

EXC Scope of Work

A high-level summary of work for the EXC scope is as follows and is described in the attached 90% final design construction documents (plans, specifications, reports):

> Perform approximately 320,000 CY of underground excavation with required ground support and concrete inverts as shown on the EXC drawings and in accordance with the EXC specifications. All

rock spoils will be deposited in the Open Cut in Lead, SD via conveyance systems (i.e. skips, crusher, and conveyor) installed separately as part of the Pre-Excavation scope. The Pre-Excavation scope, performed by others, is included as reference documents for further understanding and will be completed by November 3, 2020. The period of performance for the EXC work is scheduled to start on December 1, 2020 and be completed no later than December 31, 2023. There is a BSI scope of work for power, lighting, ventilation and other life/safety systems that will be installed upon completion of the EXC scope that will be performed by others.

Through this RFI, FRA welcomes your input on the questions and issues below. If there is anything that was not asked but is valuable to hear, FRA welcomes your insight.

1. **Current and Forecast of Manpower, Material and Equipment Demand and Supply**
   - What are the current and forecast manpower and equipment capacities and those of your company through 2024?
   - What capacity can your company bring to support the EXC scope in Lead, SD. What risks are involved?
   - What are the challenges of the EXC scope for performance in 2021-2024?
   - What long lead equipment and materials are necessary to begin the EXC scope by December 2020?

2. **Delivery Logistics and Site Access**
   - From which location and by what means would you propose to supply manpower and equipment in Lead, SD? How would you plan for and operate the required distribution equipment and people to supply the above requirements?
   - Storage on site (above ground at SURF) is limited. However, we can supply up to 2 acres of laydown onsite. We request input on the sufficiency of on-site laydown.
   - SDSTA will be providing operational support of the Ross Shaft conveyances that will be used to access the underground construction areas.

3. **Cost**
   - Please provide your best cost estimate range on the EXC if you were to perform this scope between 2021 and 2024.
   - How would you maximize resources to complete all EXC work within 36 months?
   - Please advise if a bonus incentive would decrease the overall duration.

4. **Planning and communication from 2021 to 2024**
   - FRA's plan is to solicit a request for proposal (RFP) in mid-2019 to for a bid package to perform the EXC scope starting December 1, 2020 and finishing by December 31, 2023. A notice to proceed (NTP) is anticipated to be issued by September 1, 2020.

5. **Contract**
   - Please review and comment on the executed CM/GC subcontract.
   - Please review and comment on the sample KAJV sub-subcontract.
   - Are there any terms and conditions that need to be negotiated in order to balance risk?
   - What are the potential challenges to be considered in the contracting process?
   - Would an incentive bonus per calendar day be beneficial?
   - What are your preferences for late completion, liquidated damages or actual damages?
   - What are your thoughts on utilizing Partnering, a Dispute Resolution Board and binding arbitration?

6. **Other**
   - Please provide any other information and advice that you deem appropriate for this Project.

The information requested in support of this RFI should be submitted in writing.

The primary point of contact for this RFI is Troy Lark, LBNF Procurement Manager, or his designee. All questions regarding this RFI should be submitted via electronic mail to tlark@fnal.gov by 3 P.M. Central Time on April 5, 2019. All responses to this RFI should be submitted by electronic mail to tlakr@fnal.gov by 3 P.M. Central Time on April 26, 2019.

This RFI does not commit FRA or the United States Government to pay any costs incurred in the preparation or submission of any response to procure any supplies or services.

Sincerely,

Troy Lark

LBNF Procurement Manager

Enclosure 1 – Appendix for LBNF FSCF EXC

- 90% Final Design Drawings
- 90% Final Design Specifications
- 90% Basis of Design Report
- 90% Geotechnical Baseline Report
- Executed CM/GC Subcontract with exhibits
- Pre-Excavation plans and specifications
- Sample KAJV Sub-subcontract Agreement