

Long-Baseline Neutrino Facility (LBNF) / Deep Underground Neutrino Experiment (DUNE) - US

LBNF/DUNE-US

FDC Scaffolding Rental and Installation

Statement of Work (SOW)

August 3, 2026

Document Approvals

Signatures Required	Signature & Date Approved
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Revision History

This document can be identified by the revision date as indicated in the Version Control Table below.

Author	Revision Date	Description of Changes
Steve Whiteaker	Jan. 15, 2026	Original
Steve Whiteaker	Mar. 30, 2026	Update to task order detail. Language allowing FFDG to make minor alterations to non-structural components of scaffold.
Steve Whiteaker	Aug. 03, 2026	Various updates in response to project team input/suggestions.

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Acronyms and Abbreviations

Acronym	Definition
DUNE	Deep Underground Neutrino Experiment
LBNF	Long Baseline Neutrino Facility
SURF	Sanford Underground Research Facility
FFDG	Fermi Forward Discovery Group, LLC
FDC	Far Detector & Cryogenics

1 Introduction

1.1 Background

The Deep Underground Neutrino Experiment (DUNE) at the Long Baseline Neutrino Facility (LBNF) was borne out of the 2014 U.S. Particle Physics Project Prioritization Panel (P5) recommendations. The recommendations called for formation of a truly international collaboration for constructing a US-based long-baseline neutrino oscillation experiment with a powerful neutrino beam (~MW scale), a massive liquid argon TPC (40 kt) sited several hundred kilometers downstream of the neutrino source and deep underground, and a smaller detector just downstream of the beamline. Together these elements will have the capability to unambiguously determine the neutrino mass ordering, search for CP violation in the lepton sector, search for proton decay, and observe neutrinos from core collapse supernovae.

The LBNF/DUNE-US Project is the DOE-funded construction project to create the facility and contribute US scope to the international DUNE Collaboration. The major participants in the overall LBNF/DUNE enterprise are the international DUNE collaboration, the LBNF/DUNE-US construction project, the DOE, international funding agencies, Fermilab (in Batavia, Illinois) as the host laboratory, and the Sanford Underground Research Facility (SURF, in Lead, South Dakota), where the far detector will be located.

Figure 1 illustrates the general underground work area at the SURF (far) site.

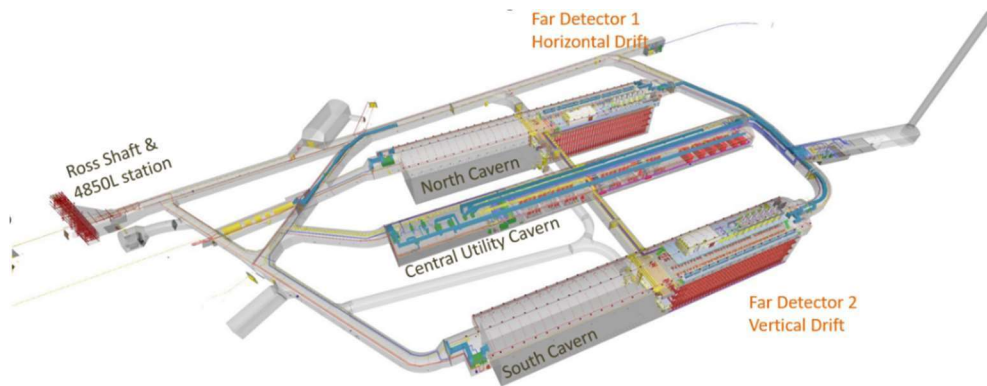


Figure 1: DOE Underground Leased Space at SURF

1.2 Purpose of SOW

The objective of this Statement of Work (SOW) is to detail the requirements relating to the engineering, rental, delivery, installation and removal of temporary scaffolding for FFDG FDC. This work will be primarily conducted underground at the 4850' and/or 4910' level of the SURF site, with the possibility of work also being requested for the surface. The work will be performed at the SURF site, located in Lead South Dakota.

1.3 Assumptions

The Subcontractor shall be responsible to the Laboratory for the acts and omissions of their employees, agents or sub-tier Subcontractors.

The SURF site location is 100 Ross Rd, Lead SD 57754.

FFDG reserves the right to make minor, non-structural changes to the scaffolding when operational need dictates. Any minor changes shall be made by an FFDG Competent Person with prior coordination and communication with the Subcontractor. FFDG Furnished equipment, material, services:

- Necessary electrical power
- Bull Gang services to transport materials underground
- OCENCO M20.3 emergency escape breathing device
- Gas Monitor for Subcontracted personnel assigned as Guide.

Scaffolding Usage: Scaffolding installed at SURF has the intended use by FFDG, visitors and 3rd party contractors in support of installation operations at SURF, Lead South Dakota. All users must meet both FFDG and OSHA compliance regulations for safe use prior to accessing the scaffolding.

1.4 Timeline

An official Kick-off Meeting (KOM) will be scheduled at a mutually agreed upon date, time, and location as soon as practical after award of subcontract. The primary purpose for this meeting is to confirm that the project participants understand the terms and conditions of the subcontract, the SOW, the specifications and drawings, the safety and the quality assurance requirements, and the work activities involved with each task.

2 Applicable Documents

Applicable documents for a specific task order, as provided by FFDG, will be provided with the relevant task order against this IDIQ subcontract and shall include:

- Number of scaffold sections (units) being ordered
- Specific location
- Anticipated rental period

Supplemental information that aid in defining tasks within this SOW are listed below.

- Cage dimensions
- SURF Site layout
- Visual of outfitted cryostat

3 SOW Performance Requirements

The Subcontractor shall provide all labor, supervision, materials, tools, equipment and transportation necessary to provide the design, rental, delivery, installation and removal of the scaffolding. All work shall be performed in accordance with applicable federal, state and local laws, and regulations, including those governing the requirements listed in this Statement of Work (SOW).

4 Required Tasks

4.1 Task 1: Environmental Safety and Health (ESH)

A corporate environment, safety, and health (ES&H) program must comply with and encompass all applicable aspects of 29 CFR Part 1910, OSHA Safety and Health Standards for General Industry, and 10 CFR Part 851 Worker Safety and Health Program.

All work planning control documents, including Standard Operating Plans (SOPs), Work Activity Plans (WAPs), Job Hazard Analyses (JHAs), and any required permits such as Working at Heights permits—shall be submitted for review and approval through the project’s cloud-based management system, Procore. No work may begin until all required documents have been reviewed, accepted, and formally approved by the project.

This approval process ensures that all hazards are identified, required controls are defined, and applicable permits (e.g., Working at Heights, Hot Work, Confined Space Entry) are verified prior to task execution. As reinforced in multiple project files, only work appearing on the approved work plan and accompanied by properly authorized hazard analyses and permits is allowed to proceed.

As part of the Exhibit A For Supply and/or Services Subcontracts, the Environmental, Safety, and Health Certification (ESHC) form will be provided to the Subcontractor for signature, indicating that the Subcontractor understands the requirement to comply with the following:

- 10 CFR Part 851, DOE Worker Safety and Health Program
- 29 CFR 1910 – OSHA Standards
- 29 CFR 1910.23 Ladders
- 29 CFR 1910.26 Portable Metal Ladders
- 29 CFR 1910.27 Scaffolds and Rope Descent Systems
- 29 CFR 1910.28 Safety Requirements for Scaffolding
- 29 CFR 1910.29 Manually Propelled Mobile Ladder Stands and Scaffold (Towers)
- 29 CFR 1926 Subpart L Scaffolds
- 29 CFR 1926 Subpart X Stairways and Ladders

Fall protection is required when a fall is greater than 4 feet deep. In addition, the Subcontractor and sub-tier subcontractors shall comply with all ES&H and FFDG requirements.

Applicable law and regulatory requirements govern; where the SOW imposes a more stringent legal requirement, that requirement applies. In the event of a conflict between two requirements, determination of “more stringent requirement” will be agreed upon with both parties through written documentation identifying which directive will be followed and the basis of the decision.

All Subcontractor personnel shall be required to attend various FFDG provided trainings, listed below, and shall be billable at the straight time rate. Following is a summary of training required by and offered by FFDG.

Table 1: FFDG Required/Provided Subcontractor Training

Course Description	Typical Duration
SURF Site Orientation - Surface	2 hours
SURF Surface practical factors	1 hour
SURF Site orientation -- Underground	2 hours
SURF Underground practical factors	1.5 hours
LBNF/DUNE Guide training for Subcontracted Crew Leads	4 hours

The Subcontractor and any sub-tier Subcontractor performing work at SURF will be responsible for the following requirements.

- The Subcontractor shall be responsible for assuring that their employees and sub-tier Subcontractor employees, who do not speak English, understand all ES&H requirements. The Subcontractor must be able to communicate any necessary instructions to those employees.
- All Subcontractors/sub-tier Subcontractors performing work at SURF shall provide their employees with any necessary ES&H training as may be required by federal/state regulations, and as appropriate for their Subcontract activities at Sanford Underground Research Facility (SURF).
 - Exceptions involve hazards which are unusual for subcontractor employees. For example, FFDG normally provides appropriate training for Subcontractors working in oxygen deficient hazard areas.

- Records of ES&H Training that were provided by the Subcontractor, or others, and received by Subcontractor employees performing subcontractor activities at SURF shall be available for review by FFDG upon request.
- Subcontractors shall maintain and provide to FFDG upon request, any and all occupational safety and environmental records.
 - Records required to be maintained by federal/state regulation.
 - OSHA injury/illness logs, training records
 - Inspection records
 - Safety meeting minutes
 - Incident investigations documentation
- Any additional records appropriate for the Subcontractor's activities shall also be maintained and provided to FFDG upon request.
- If the Subcontractor intends to administer first aid or Cardiopulmonary Resuscitation (CPR), the Subcontractor must comply with 29 CFR 1926 and make available the list of names of any employee who will administer first aid or CPR, along with current certifications.

4.2 Task 2: Quality Assurance / Quality Control

In conjunction with the General Terms and Conditions for Subcontracting Combining Supplies and Services Performed at SURF Quality Requirements, unless otherwise specified by the task order or the FFDG Technical Representative, the Subcontractor's on-site supervision will be responsible for the following.

- All activities necessary to manage, control and document work to ensure compliance with the Subcontract requirements.
- Ensuring adequate Quality Control services are provided for work accomplished on and off site by the Subcontractor's organization, suppliers, sub-tier Subcontractors, technical laboratories, and consultants.
- Performing required inspections and testing and implementing any related quality controls necessary to meet subcontract requirements.
- The quality and timely provision of workmanship and material provided in this subcontract.

4.3 Task 3: Schedule

Schedules for a specific requirement will be specified in the relevant task order against this IDIQ subcontract. Task orders shall specify if work is to be performed on day shift or night shift.

The Subcontractor shall coordinate the schedule for all on-site activities with the designated FFDG Technical Representative.

Recognized FFDG Holidays

- The Subcontractor shall not perform on-site work on the following FFDG-recognized holidays, unless otherwise authorized in writing.
 - New Year's Day
 - Martin Luther King Day
 - Memorial Day
 - Juneteenth
 - Independence Day
 - Labor Day
 - Thanksgiving Day
 - Day After Thanksgiving
 - Christmas Eve (half day)
 - Christmas Day
 - New Year's Eve (half day)

In addition to the scheduled holidays, expect various work stoppages due to extreme weather conditions. On average, these additional work stoppages equate to approximately 7 days per year.

4.4 Task 4: Task Order #1 - Scaffold Services

The Subcontractor providing the scaffolding shall also be required to deliver, install and remove scaffolding as requested by FFDG. Listed below are the steps and considerations relating to the FFDG scaffolding requirements.

Scaffolding

Upon receipt of a fully executed Task Order between the Subcontractor and FFDG, the Subcontractor shall provide scaffolding, as well as the associated delivery, installation and eventual removal.

The Subcontractor must have the capability to provide the rental scaffolding of varying sizes and complexity.

Site Specific Requirements

- The Subcontractor shall use a Qualified Person to design the temporary scaffolding.
 - Definition: One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.
 - Scaffold drawings/plans shall be provided to FFDG upon request.
- The Subcontractor shall use a Competent Person to build and inspect the temporary scaffolding.
 - Definition: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- The Subcontractor shall not mix various types of scaffolding and shall only use one brand and model number.
- Fall Protection must be provided when a free fall of greater than 4' is possible or when other hazardous conditions exist.
- The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks, shall not be used to support scaffolds or planks.
- All planking or platforms shall be overlapped (minimum 12 inches) and secured from movement.
- An access ladder or equivalent safe access shall be provided.
- Scaffold planks shall extend over their end supports not less than 6 inches or more than 12 inches.
- Overhead protection shall be provided for men on a scaffold exposed to overhead hazards.
- Materials hoisted onto a scaffold shall have a tag line.
- Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail using 2x10 lumber.
- Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:
 - Guys, ties and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet (6.1 m) or less thereafter for scaffolds 3 feet (0.91 m) wide or less, and every 26 feet (7.9 m) or less thereafter for scaffolds greater than 3 feet (0.91 m) wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9.1 m) (measured from one end [not both] towards the other).
- In addition to wearing hard hats each worker on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toe boards, screens, or guardrail systems, or through the erection of debris nets, catch

platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

- The area below the scaffold to which objects can fall shall be barricaded, and workers shall not be permitted to enter the hazard area, or a toe board shall be erected along the edge of platforms more than 6 feet (3.1 m) above lower levels for a distance sufficient to protect workers below.
- Where tools, materials, or equipment are piled to a height higher than the top edge of the toe board, paneling or screening extending from the toe board or platform to the top of the guardrail shall be erected for a distance sufficient to protect workers below.
- Toe boards must be at least three and one-half inches (9 cm) high from the top edge to the level of the walking/working surface. Toe boards shall be securely fastened in place at the outermost edge of the platform.
- Guardrails must be 2x4 inches or equivalent, approximately 42 inches +/- 3 inches with a mid-rail.

Pre-Assembly Requirements

- A Competent Person must supervise the setup and determine the suitability of the intended location.
- The Subcontractor shall set up barriers or warning signs around the scaffold area to keep unauthorized personnel out and alert others about potential overhead hazards.
- The Subcontractor shall erect scaffold only on horizontal surface
- The Subcontractor shall erect scaffold only on a surface, which can carry the load of the scaffold when in use. When using the scaffolding on plywood or planks covering an opening make sure the planking or supports can support the scaffolding and loading and the cover itself.
- The Subcontractor will not erect on loose surfaces like gravel or dirt.
- If necessary, the Subcontractor will clean surface before erecting the scaffold.
- The Subcontractor will use only system scaffolds and only one system/manufacturer and material for each scaffold to be erected. An exception to that is handrails and toe-boards, which can be made of 2x4s or similar lumber sections but should not be made of parts from different sources. All subcontractor scaffolding and associated individual components shall have unique markers that identify that material with their company. This requirement ensures accurate tracking of material when multiple Subcontractors are working in the same location. Acceptable forms of marking may include paint, tags or other methods agreed upon between the Subcontractor and the FFDG Technical Representative.
- The Subcontractor shall have all parts needed before starting the erection, including

handrails, toe-boards, ladders, x-braces, planking.

Scaffold Erection

- A Competent Person must supervise the erection at all times, and only trained workers shall be working on the erection.
- The Subcontractor shall visually inspect all parts intended for temporary or permanent use.
- The Subcontractor shall start with first pair of frames and x-braces.
- A rolling scaffolding cannot be longer than the span of one x-brace, do not put three sets of frames and two sets of x-braces together to build a scaffold (see 7. Schematic Sketches)
- The Subcontractor shall install castors with brakes locked. All castors used must have a working brake.
- The Subcontractor shall install further frames with x-braces until final height is reached. Use x-braces of the same size only and use frames of the same type and manufacturer only.
- The Subcontractor must use harness when working above 4 ft. (29 CFR 1910 General Industry) or 6 ft. (29 CFR 1926 Construction) with no handrail and shall not tie off to a scaffold that is not completed.
- The Subcontractor will use temporary working decks for safe and easy erection
- The Subcontractor shall install working deck at a height close enough to the working height so that no further adjustments (ladders, wooden boxes, buckets, lumber etc.) are necessary to reach the working area. All working decks must be fully decked.
- The Subcontractor will use prefabricated working decks of the system used where available instead of scaffolding planks and working decks must be secured in place. In the instance that scaffolding planks must be used, they must consist of a minimum of 2x12 dimensional lumber.
- The Subcontractor shall install handrails and toe-boards where required on every permanent working deck.
- The Subcontractor shall install ladder mounted to the scaffold during erection as soon as it is safe to do so.
- All exposed surfaces shall be free from sharp edges, burrs etc.. The Subcontractor should not use wire to fix handrails where possible.
- After the erection is completed, the Subcontractor must double-check all connections, dimensions and parts used.
- The Subcontractor shall clean the area used for the erection.

Dimensions

- The maximum height cannot exceed 4 times the smaller base width. If the working deck needs to be higher, either the base width must be extended with parts provided by the manufacturer, or the rolling scaffolding must be transferred to a fixed scaffolding (replace the castors with baseplates) and then tie back to an existing structure at the required heights.
- Minimum base width is 20 inches.

- Handrails, mid-rails and toe-boards are required at a height of the working deck of above 10 feet. Handrails must be between 36 and 42 inches from the working deck.
- Scaffolding planks or manufacturer-provided working decks must either be secured in place by cleats or hooks or similar or must extend over the support by more than 6 inches, but not more than 12 inches (see 7. Schematic Sketches).
- Rest platforms shall be provided at intervals not exceeding 20 feet along the length of extended fixed ladders.

Stairways

- Stairways that will not be a permanent part of the structure on which construction work is being performed shall have landings of not less than 30 inches.
- Stairways having four or more risers or rising more than 30 inches (76 cm), whichever is less, shall be equipped with:
 - At least one handrail; and one stair rail system along each unprotected side or edge.
- The height of handrails shall be not more than 37 inches (94 cm) nor less than 30 inches (76 cm) from the upper surface of the handrail to the surface of the tread.

Scaffold Inspection and Tagging

All scaffolding is required to be tagged by the Subcontractor's designated Competent Person for scaffolds, indicating its suitability for use. Tags shall be affixed to the scaffold, so they are easily noticeable at each access point. The color coding is as follows:

Table 2: Scaffold Tagging Color Scheme

Scaffold Tag Color		Definition
Red		UNSAFE - Do Not Use
Yellow		Warning - Hazard Exists
Green		Ready to Use

Figure 2: Sample Scaffold Tags



Disassembly of Scaffolding

- Remove scaffolding by carefully following the reverse order of erection procedures.
- A Competent Person shall supervise the Scaffold Erectors during disassembly to ensure standards and regulatory requirements are met.

4.5 Training and Supplies

The Subcontractor is responsible for providing their staff with the following training and provision of supplies:

- Training per person:
 - Expected training provided by Subcontractor:
 - Subcontractor installing/removing scaffolding shall ensure their personnel are Competent Person certified. This training should align with OSHA standards, and include the following:
 - 29 CFR 1910.27 - Scaffolds and Rope Descent Systems
 - 29 CFR 1926.450 – Scaffolds
 - 29 CFR 1926.451 – General Requirements
 - 29 CFR 1926.452 – Additional Requirements Applicable to Specific Types of Scaffolds
 - 29 CFR 1926.454 – Training Requirements
- Subcontractor provided equipment/supplies including:
 - Safety (PPE)
 - Type II Safety helmet with chin strap and light
 - Safety toe boots above the ankle
 - Level IV cut resistant gloves
 - Class II Reflective clothing
 - 4" sleeves over the shoulder
 - Long pants
 - Safety glasses
 - Hearing protection (only when required)

- Any additional PPE as required by the specific work plan and associated Job Hazard Analysis (JHA)
 - Small Tools and Supplies (STS)
- FDDG shall provide to the Subcontractor the following equipment/materials.
- Underground self-rescuers
 - Self-rescuers are portable devices that provide breathable air, should the surrounding atmosphere lack oxygen or become contaminated.
 - Self-rescuers are required to be carried by all underground staff when accessing the underground facilities at all times.
 - Personal Air Monitors
 - Air monitors, 4-gas monitors, are required to be carried by each underground guide.
 - Gas monitors shall have the capacity to measure NO₂, CO₂, O₂, and H₂S.

5 Deliverables

5.1 Subcontractor's Deliverables

The Subcontractor shall provide the following deliverables in accordance with the format for documents deliverables provided in Section 5.2. The Subcontractor shall prepare, submit and maintain the following documentation.

Table 3. Deliverables

Category	Description
ESH	Subcontractor personnel certifications
ESH	Standard Operating Procedure (SOP)
ESH	Job Hazard Analysis (JHA)
ESH	Relevant Permits (ex. Working from Heights, Hot Work, Confined Space)
Technical	Catalog for specific scaffolding systems
Technical	Certification from manufacturing – rosette tie offs
Technical	Relevant design drawing and analysis for requested scaffolding
Technical	Scaffold Location/Detail Log to include: • Scaffolding erected • ID# • Associated cost • Date erected • Scaffold dimensions • Location within facility • Associate photograph of the erected scaffold • Name of individual who erected scaffolding • Date removed • Name of individual who dismantled the scaffolding

The Subcontractor shall submit the following documentation for FFDG for review and approval. All deliverables shall be submitted in accordance with the approved project schedule, unless otherwise directed by FFDG.

Modified scaffolding shall require a new entry and ID within the Scaffold Location/Detail Log. The log will be reviewed and approved by FFDG Technical Representative or designee. The Scaffold Location/Detail Log shall accompany the Subcontractor's submitted invoice and shall serve as the backing documentation for all Subcontractor charges.

5.2 Format for Documentation and Deliverables

Electronic distribution utilizing Procore, FFDG's cloud-based management system, will be the standard method of transmitting all documentation/deliverables. All contract documents are to be identified by Task Order number and provided in a searchable PDF format. Alternate formats may be provided, only with prior approval from the FFDG Technical Representative.

Oral presentations, if requested, shall use PowerPoint software.

6 Periodic Communication

Progress meetings between FFDG and the Subcontractor will be conducted regularly either in person and/or via tele/video conference on an as-needed basis. These meetings will be held at scheduled times and locations mutually agreed to. The meetings shall include discussions of the Subcontractor's progress, potential problems, resources, technical and contractual issues.

End of document
