Engineering Services Division

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LANL Engineering Services (ES) Division

- **Mission**
  - Provide facility and system engineering support to Operations and Maintenance for Facility Management organizations, and to provide design and project engineering services of projects, throughout the Laboratory

- **Key Personnel**
  - Jim Streit – Division Leader
  - Jason Apperson – Deputy Division Leader (Acting FE)
  - Dennis Graves – Deputy Division Leader EPD

- **Engineering Services**
  - Engineering Groups for each Facility Organization
  - Design/SME Engineering
  - Project Engineering
  - Fire Protection Engineering

- **Activities Supported**
  - LANL Building Official program / LANL Fire Marshal
  - Site-wide modification design for all disciplines
  - Design review and approval (internal & external)
  - Institutional Engineering SMEs
  - Project support
LANL Process for Engineering Execution

- LANL Engineering Standards Manual (ESM)
  - The standards are a consolidation of DOE regulatory requirements; industry consensus standards, codes, and regulations; State of New Mexico codes and regulations; AND specific requirements for LANL

- LANL Master Specifications
  - Provides LANL-specific requirements and guidelines for the procurement, installation and testing of engineering designs.
  - The specifications complement the requirements in the ESM and identify which submittals are required in support of an engineering design or construction activity.

- LANL CAD Standards Manual
  - Provides LANL-specific requirements and guidelines for the development and production of engineering drawings. This ensures consistency in the engineering drawing packages, minimizing rework.

- LANL Conduct of Engineering (CoE) Procedures (APs)
  - Provides documented systematic processes and procedures for the execution of LANL engineering activities. Includes processes for defining engineering scope and requirements for a project. The APs may apply to the engineering subcontractor (rarely, where invoked)
LANL Process for Engineering Execution

- **LANL VIEWS PROJECT DESIGN IN FOUR PHASES**
  
  - **TITLE I** – **CONCEPTUAL AND PRELIMINARY DESIGN** When engineering concepts are established and documented (Drawings, Specs & Calcs).
  
  - **TITLE II** - **DETAILED DESIGN PHASE** of a Project. Engineering is completed, verified and reviewed and approved for issue to construction.
  
  - **TITLE III** - **CONSTRUCTION PHASE** of the Project where equipment is ordered, installed and tested according to the final design.
  
  - **TITLE IV** – Is handover to the owners and **Close-Out** of the Project final documentation.
LANL Engineering Deliverables (Typical)

- Engineering Calculations
- Drawings
  - Architectural
  - Civil/Structural
  - Mechanical
  - Electrical
  - Process/Piping/Fire Protection/Security/I&C
- Pressure Safety Packages
- Procurement Specifications
- Construction Specifications
- Test and Inspection Plans
LANL has a standing task order contract (IDIQ) with six prime engineering firms. Each prime engineering firm has multiple lower-tier subcontractors. The task order contract is re-competed every 5 to 7 years.

For Design-Build projects, a specific contract will be developed that can have an engineering firm that is not part of the IDIQ contract.

For unique tasks that cannot be supported by the IDIQ engineering firms, a specific task order contract can be issued.
LANL Contracts and Documents

- **KEY ENGINEERING DOCUMENT REQUIREMENTS ARE IN THE EXHIBIT “D”** – It defines the scope of the task and documentation requirements for a LANL specific project

- **PROCUREMENT PACKAGES CAN BE VERY INTIMIDATING**
  - Large volume of documents
  - Very detailed and specific
  - Refer to many DOE and National Standards

- **Historical Issues with A&Es**
  - Not meeting design submittal (deliverable) requirements; lacking in specified information
  - Document review requirements: submitting incomplete designs or not addressing comments
  - Pressure safety requirements; not having a full understanding of ASME B31 or B&PVC.
  - LANL’s Seismic Design Category “D” requirements: LANL site is well characterized and exceeds the criteria for Seismic Design Category “C” requirements
Engineering Services ‘Needs’

- **Specialty Design & Design-Build Subcontractors**
  - Horizontal directional drilling
  - HDPE installation
  - Traffic pattern studies, Traffic control systems
  - Seismic/Structural/Geotechnical
  - Pressure Safety (ASME B31-series, B&PV code)

- **A/E and Fabricators for Nuclear Facility Processes**
  - Gloveboxes, experimental enclosures, confinement systems

- **3rd Party IBC Section 110 and Chapter 17 Special Inspection Agencies**