
The MIT Lincoln Laboratory West Laboratory Project



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Overview

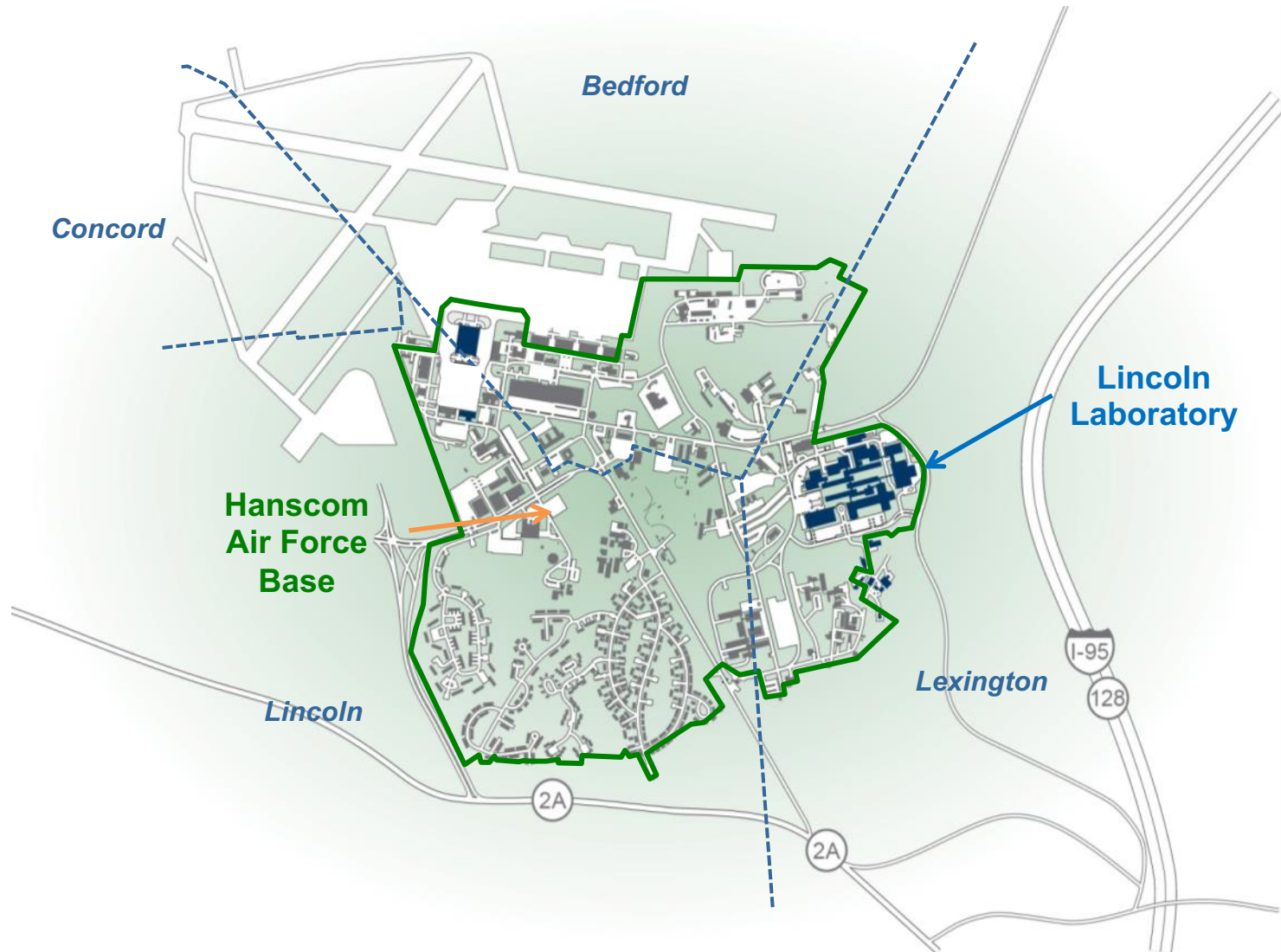
MIT Lincoln Laboratory is a federally funded research and development center that was established in 1951. The Laboratory facilities are located on Hanscom Air Force Base and many of the buildings date from the 1950s and have had no significant upgrades.

Facilities condition assessments have determined these 60+ year-old buildings need to be repurposed or replaced. MIT LL has developed a Facilities Modernization Plan (FMP) to address the facilities.

The central theme of the MIT LL FMP is the “West Lab Project”, funded by Military Construction, which consists of two buildings: the Compound Semiconductor Lab - Microsystems Integration Facility (CSL-MIF) and the Engineering Prototyping Facility (EPF).



MIT Lincoln Laboratory Location





MIT Lincoln Laboratory – 1950s



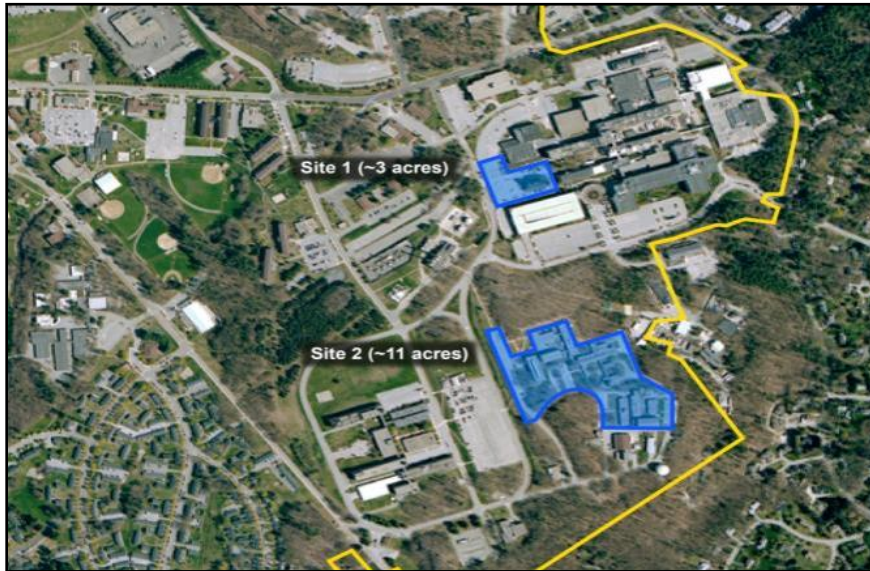


MIT Lincoln Laboratory - Today





West Laboratory Project: CSL-MIF and EPF



Compound Semiconductor Laboratory–
Microsystem Integration Facility (CSL-MIF)

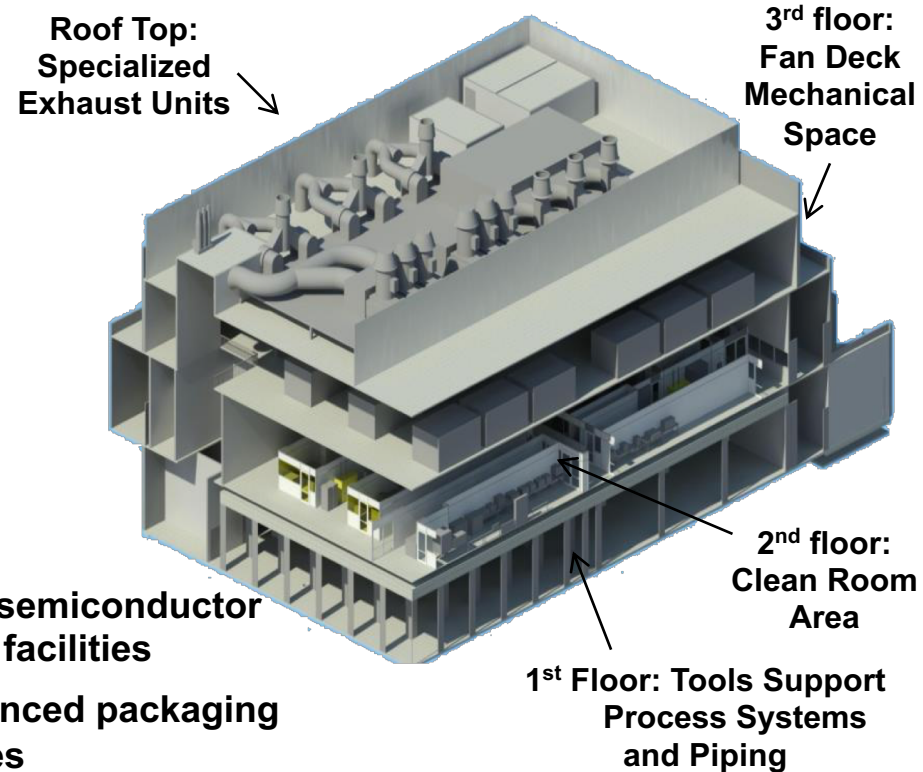


Engineering Prototyping Facility
(EPF)

- **CSL-MIF: 160,000 SF Facility:** (Construction 2019-2021)
 - ~160 K Gross SF (38 K Net SF Class 10/100/1000 clean room space)
- **EPF: 280,000 SF Facility:** (Construction 2022-2024)
 - 290 K Gross SF (19 K Net SF Class 1000 clean room space)



Compound Semiconductor Lab and Microsystems Integration Facility (CSL-MIF)



- **Consolidates the laboratory's existing compound semiconductor materials growth, fabrication and characterization facilities**
- **Consolidates and enhances the Laboratory's advanced packaging facilities to integrate different process technologies**
- **2014 - Basis of Design Completed**
- **2017 – Architecture and Engineering initiated**
- **Status: Request for Proposal for Construction Manager released**
 - **Design currently 95% complete**
 - **Contract award scheduled for September 2019**



Advanced National Security Technologies Enabled by new CSL-MIF Facility

Technology

Next-generation large area, multimode avalanche photodiode arrays

3D-integrated GaN on Si CMOS with embedded cooling for low cost T/R modules

Scalable 3D integration of large numbers of qubits with embedded classical control circuitry

Optical phased array panel based emitters with 3D integrated control

Heterogeneous integration of RF electronics, digital electronics, power systems, and sensors for low SWAP microsystems

Significance

Potential to significantly enhance area coverage rates in 3D LADAR and multi-mode imaging

Key element of low-cost high-power panel approach to significantly reduce phased array radar costs

Key technology demonstration on the path to a practical quantum computer

Potential to significantly reduce SWaP and cost for high energy laser systems

Enables small-scale satellite systems for Intelligence, Surveillance and Reconnaissance (ISR)

Combination of CSL-MIF and Microelectronics Laboratory will enable specialized microsystems for national security



MILCON: Engineering Prototyping Facility (EPF)



- **Consolidates all Engineering Division labs and offices**
- **Modern facility for rapid and conventional prototyping efforts with modular flexible construction approach**
- **2016 - Basis of Design completed**
- **Status: Design 30% complete**
 - **FY20-21 Contract to complete design**
 - **FY22 Award contract and start construction**

