

Project Experience Highlights

Academic Projects

NFX Facility

SUNY College of Nanoscale Science and Engineering—Albany, New York

Design Principal 2011-2013

Led interactive design sessions and development of conceptual design; provided design oversight and review for detailed design. The team designed a new \$300M cleanroom facility for advanced semiconductor and nanotechnology research and development. The NanoFabXtension (NFX) facility is located at the University at Albany, State University of New York. This 325,000 SF advanced facility is the first in the world to house extreme ultraviolet light (EUVL), 450mm toolset and automated material handling totaling between \$2B - \$2.5B. The project includes a large CUB expansion and a personnel and material handling link that crosses an existing four-lane highway. A fast-track design and construction approach will deliver this prominent facility in less than 20 months from start of programming to first tenant occupancy.

Australian Institute of Nanoscience

University of Sydney—Sydney, Australia

Senior Design Consultant 2012

Provided design leadership and design overview for this addition to the historically significant Physics Building at the University of Sydney, including research labs, teaching labs, vibration sensitive metrology labs for advanced electron microscopy and imaging, a flexible cleanroom for nano-scale research, and multiple specialized labs with highly controlled environmental conditions. The building is designed to a high standard of sustainability, using Australia's Green Star program.

Material Science and Engineering Department Renovations

Carnegie Mellon University—Pittsburgh, Pennsylvania

Design Principal 2008-2012

Led design effort through programming and conceptual design, providing design leadership and oversight throughout the project. This project included the renovation of approximately 11,000 SF of space within Doherty Hall, a Palmer & Hornbostel building built in 1908, to modernize the facility and accommodate enrollment growth. The project included a renovation of the undergraduate laboratories and classroom space that will enable the delivery of a modern and evolving materials engineering curriculum, enhance laboratory safety, and support recruitment of new students. The project will also provide office space for doctoral and postdoctoral students.

Egypt Nanotechnology Center

Information Technology Industry Development Agency (ITIDA)—Cairo, Egypt

Design Principal 2010-2011

Led design effort through programming and conceptual design; provided design oversight throughout the project. Located within a recently constructed building on the extended Cairo University campus, the initial fit-up included approximately 60 percent of the 15,300 SM

(164,600 SF) building and involved cleanrooms, dry and wet labs, office and administration, and central utility plant spaces. Key research areas of the facility include thin film silicon photovoltaics, spin-on carbon-based electrodes, energy recovery from concentrated photovoltaics for desalination, and computational modeling and simulation.

Ken Morrison Life Science Center Phase 2
University of Nebraska at Lincoln—Lincoln, Nebraska
Design Principal/Senior Reviewer 2011-2012

Led design effort and provided senior review services. The project involved design for a 29,000 GSF addition to the north side of the existing 74,000 SF Ken Morrison Life Sciences Research Center (Phase 1). As planned during Phase I, the Phase II laboratory wing employed a modular planning approach and integrated research laboratory, lab support space, and office space in a compact, efficient manner to encourage and facilitate maximum interaction and collaboration. A shared circulation corridor or spine tied the new BSL-2 lab suites into the existing laboratory wing corridors at a shared lobby space or hub. A new 80-seat seminar room completed the program for the center.

Mountbatten Complex
University of Southampton—Southampton, England
Design Principal/Lab Architect 2007-2009

Provided architectural design leadership for the design of the 120,000 SF Mountbatten Complex. This facility was designed to be a world leading nanotechnology research facility housing multiple laboratories and administration accommodations. The building was designed to minimize its footprint while allowing light to penetrate as much of the office and research space as possible. Flexible cleanroom and clean lab space, technical labs, research labs and offices, and technical support areas are housed within this robust facility.

Ken Morrison Life Science Center
University of Nebraska—Lincoln, Nebraska
Design Principal/Senior Reviewer 2004-2008

Led design effort and provided design review services for the design of a 74,000 SF laboratory as the first phase of the Ken Morrison Life Sciences Research Center. The facility supports research in AIDS and other diseases and includes a BSL-3 containment laboratory.

Renovations to Life Science Complex
University of Pittsburgh—Pittsburgh, Pennsylvania
Design Principal 2006-2008

Provided architectural design leadership for the upgrade of a portion of the 330,000 SF Life Science Complex including the renovation of laboratory, research, and support space into a modern facility. The complex houses the departments of biosciences and neurosciences and encompasses various research labs, vivaria, instructional spaces, classrooms, and offices. A majority of the buildings were occupied during the construction phases and disruption was kept to a minimum.

Renovation to Mellon Institute
Carnegie Mellon University—Pittsburgh, Pennsylvania
Design Principal 2005-2010

Provided architectural design leadership for multiple projects within the historic Mellon Institute including laser labs, biology labs, electronics labs and chemistry labs; as well modifications and upgrades to historically sensitive public spaces and overall infrastructure upgrades.

Cosmo Lab
University of Vermont—Burlington, Vermont
Design Principal 2007-2008

Provided architectural design leadership for the renovation of a geochemistry laboratory specializing in cosmogenic nuclide research requiring a cleanroom environment free of boron contamination. The boron-free environment provided a design challenge since traditional construction materials for fireproofing; cleaning, thermal insulation, and gypsum wallboard contain levels of boron far exceeding the parts per million levels that is significant to the research.

Incubator Research Facility
West Virginia University—Morgantown, West Virginia
Design Principal 2005-2007

Provided architectural design leadership for the design of a 60,000 SF research laboratory for the West Virginia University Research Corporation. This building is the first facility in a new research park that local and state economic development entities, along with West Virginia University, will use as a magnet for high technology business. The park will serve as a catalyst for economic development in the region, and encourage the flow of new technologies from research laboratories into commercial production.

Murray Hall Renovations
The Ohio State University—Columbus, Ohio
Design Principal 2005-2007

Provided architectural design leadership for the Murray Hall renovation and preceding feasibility study for the 80,000 SF building which was built circa 1970; project included a variety of wet and dry research labs.

Campus Wide Science Building Assessment
University of Pittsburgh—Pittsburgh, Pennsylvania
Principal Architect 2005-2006

Provided architectural design services for the development of plans for an assessment and concept design for the renewal of 15 research facilities and over 2,000,000 SF of laboratory space. The project team worked closely with the university facility management group and academic departments to renew a variety of labs including engineering, biotech, laser, and natural science. A database was developed that facilitated Pitt's development of a 12 year, \$1 Billion capital plan

Nanofabrication Facility Extension
Penn State University—State College, Pennsylvania
Design Architect 2003

Provided architectural services for the design of a nanofabrication facility expansion and upgrade to an existing building within Penn State's Innovation Park. The project included concept studies for expansion of cleanroom and support facilities.

Higher Education Facility
North Hills Learning Alliance—Pittsburgh, Pennsylvania
Design Architect 2002-2003

Provided programming and architectural design services for an 80,000 SF high-tech conference and higher education facility on a difficult site with extensive wetlands

Latham Hall
Virginia Tech—Blacksburg, Virginia
Architect 2002

Called in to troubleshoot design problems, provided design services for interior laboratory planning and the building massing and elevations. The project was a 100,000 SF research lab that serves both the Agriculture and Natural Resources departments.

Chemistry Lab Addition
Loker Hydrocarbon Institute, University of Southern California—Los Angeles, California
Architect 1994

Provided architectural services and lab planning for the design of a 30,000 SF chemistry lab addition to an outdated mid century building.

Engineering Unit 2
University of California—Irvine, California
Architect 1991-1992

Provided architectural services for the design of a 125,000 SF microfabrication and civil/mechanical laboratory as well as classrooms and conference spaces (Engineering Unit 2).

Engineering Building II
University of California—San Diego, California
Architect 1991-1992

Provided architectural services for the design of a 133,000 SF engineering laboratory facility that included faculty offices (Engineering Building Unit II).

Ralph and Goldy Lewis Hall
University of Southern California—Los Angeles, California
Lead Architect 1996-1997

Provided architectural services during programming, schematics, and design development for a 50,000 SF facility that included office space and high-tech multi-tiered classrooms for the School of Urban Planning and Development

Humanities and Fine Arts Complex
University of California—Irvine, California
Lead Architect 1991-1992

Led programming and concepts for three new arts buildings totaling approximately 150,000 SF integrated into an existing complex

Humanities and Social Sciences Building
University of California—Santa Barbara, California
Architect 1992

Provided programming, needs assessment, and schematic design services for the design of a 100,000 SF facility that included earth science labs, performing arts spaces, classrooms, and offices

Graduate School of Business
University of Chicago—Chicago, Illinois
Architect 1990-1991

Provided programming and architectural design services through schematics for the design of a 250,000 SF downtown facility on the north shore of the Chicago River for the U of Chicago's executive MBA program

Library and Fine Arts Facility
Episcopal School of Dallas—Dallas, Texas
Architect/Project Architect 1982-1984

Provided architectural services during master planning, programming, and all phases of design and construction for a 35,000 SF library and fine arts building that was added to an existing classroom building

Science and Technology Projects (Non-Academic)

NYSA Facility

JCI; York, Pennsylvania

Design Principal 2013-current

Providing design leadership and oversight for a 340,000 SF research and testing facility. Phase one scope includes 240,000 SF testing facility and 100,000 SF office space on a 60 acre site near the Mason Dixon line (PA/MD border). Work includes a master plan for future development that will more than double the phase one scope.

Global Headquarters

Industrial Scientific Corporation—Pittsburgh, Pennsylvania

Design Principal 2012 to current

Provided design leadership and oversight for a corporate headquarter facility. Phase 1 of the project involved 200,000 SF including 70,000 SF of light manufacturing space, 80,000 SF of offices, 20,000 SF of laboratories, and 30,000 SF of shelled space. Site was master planned to accommodate 350,000 SF.

Cleanroom and Office Expansion

United Microelectronics Corporation—Tainan Science Park, Taiwan

Design Principal 2011

Provided design leadership for the master planning and conceptual design a major expansion of an R&D and manufacturing site. The project team developed a basis of design (BOD) for a new site development that included site master plan, manufacturing planning, and facility BOD. The 21-hectare site will house two 300mm fab buildings, each containing 50,000 SM of Class 1 to 1,000 cleanroom designed to accommodate future EUV lithography and 450mm wafers. Process technology will be 28nm initially with future 20/14nm capability. The development will also include two CUBs, two office buildings, two power substations, and HPM warehouses.

Global Research Facility

Confidential Client—North Carolina

Design Principal 2011

Led design effort through programming and conceptual design; provided design oversight throughout the project. The team provided full design (architectural and engineering) and construction management of a 323,700 SF research laboratory and office building. Program elements included cleanrooms, FDA/GMP spaces, conference rooms, collaboration areas, research and administrative offices, pilot production facilities, and biology, chemistry, specialty, product development, and imaging laboratories.

Bio-Containment Facility

Defense Threat Reduction Agency (DTRA)—Tbilisi, Georgia

Senior Consultant 2010

Designed prototype labs and performed site assessment for multiple locations as well as an assessment of a constructed BSL-3 high security containment lab that is not currently functional. The Biological Threat Reduction Program (BTRP) initial scope included conducting a gap analysis and needs assessment, planning transition activities to phase out the incumbent contractor and begin role as an integrating contractor, and conducting an alternatives analysis for renovation versus new-build options for two facilities integrating into TADR network.

**Advanced Technical Research Center for Frederick National Laboratory for Cancer Research
NCI—Frederick Maryland**

Design Principal 2008- 2011

Led overall conceptual design and lab design for a 330,000 SF Advanced Technical Research Facility with labs for cancer research, pilot production of potential drug therapies, and administrative and conference facilities. The labs are designed to be highly flexible, with overhead service carriers, and table based lab benching. 10 percent of all the labs are designated for outside researchers to collaborate with the NCI researchers. This facility was designed following sustainable design principles and earned Green Globe recognition.

323 Annex

IBM Corporation—East Fishkill, New York

Reviewer 2004-2008

Reviewed architectural design drawings and specifications. The team designed a 72,000 SF Class 100 addition to an existing facility to accommodate a 300mm manufacturing and development fab.

Clean Lab

IBM Corporation—Yorktown Heights, New York

Lead Architect 2003

Provided architectural services for the design of a 7,000 SF laboratory for microelectronics research. Design involved a phased concept for conversion of a traditional laboratory to a ballroom/cleanroom space for microelectronics research within the historic Eliel Saarinen designed research facility.

Temple Bioscience Research Center—Temple, Texas

Lead Architect 2004

Provided architectural services for the design of a 200,000 SF research laboratory that supports the Texas A&M Medical School, Scott and White Hospital, and the Veteran's Administration. The facility was originally a high tech manufacturing building that is being converted into laboratories to support cardiovascular and cancer research, as well as biotech incubator labs.

Memorial Sloan Kettering Cancer Research Laboratory

MSK—New York City, New York

Architect 2002-2003

Senior architect focused on design development of the laboratories and public spaces and overall quality assurance reviews. The project involved design of a 400,000 SF biomedical and chemistry research laboratory, including vivarium and MRI.

Hatfield Clinical Research Center

National Institutes of Health—Bethesda, Maryland

Senior Project Architect 1997-2003

Participated in design leadership, led technical design, and acted as the primary client contact on a daily basis. Responsibilities included programming, conferencing with users, and leadership of all aspects of project design, development and documentation of a 1,200,000 SF biomedical laboratory and clinical research hospital including a vivarium. Design focus included the exterior envelope, interior public spaces and laboratory interior spaces.

Building 29 Biotechnology Research Center

Amgen—Thousand Oaks, California

Architect 1996

Provided laboratory planning and schematic design services for the interior public spaces, laboratories and exterior envelope of a 250,000 SF research facility.

Corporate and Institutional Projects

Multiple Interior and Exterior Design Renovations

Bayer Corporation—Pittsburgh, Pennsylvania

Design Principal 2010-2012

Oversaw development of design concepts for the redesign of interior spaces to increase collaboration and improve space utilization as well as renewing the exterior façades of several corporate office buildings to improve appearance and energy efficiency. Building 14 and Building 16 are both LEED Gold projects with interior and exterior renovations that support Bayer's goals to improve their ability to recruit and retain top notch talent. Buildings 1, 2 and 3 were un-insulated masonry office buildings which were given new envelopes utilizing three different insulation systems to demonstrate Bayer Material Science materials; these projects also pioneered a fiber reinforced curtainwall system that outperforms conventional aluminum systems.

Manufacturing Site Repurposing

Carrier Corporation—Syracuse, New York

Architect/Planner 2009-2010

Participated in design workshops and design reviews for the initial master plan and performed design overview. The project included a site reuse plan that involved an economic/market analysis, master plan, and implementation plan to identify a vision and implementation strategy for the future of this aging 256-acre manufacturing campus.

Global Headquarters

MEDRAD—Warrendale, Pennsylvania

Design Principal 2006-2007

Provided architectural design leadership for the design of a 125,000 SF corporate office center. This facility achieved LEED® Gold Certification using sustainable design principles and is set within a hilly, forested site. The design employed underfloor air distribution, maximized daylight and views, and was planned for flexibility and future expansion. (PN: 378075; YR: 06/2008 to 11/2009; Role: Principal Design Architect)

Master Plan for Airport Controlled Land

Allegheny County Airport Authority—Allegheny County, Pennsylvania

Architect/Planner 2003-2004 and 2010

Provided architectural planning services for 20,000,000 SF of mixed use space on 1,500 acres of land under control of the Airport Authority. First effort led to later master plan updates, and includes the design of a planned World Trade Center district.

Conference Center Upgrades

City of Chesapeake—Chesapeake, Virginia

Design Principal 2009

Led concept design and provided ongoing design direction. The project was a \$1.5 million renovation for the City of Chesapeake to upgrade the interior and exterior amenities at the existing Conference Center. The upgrades were intended to make it a showpiece for the City.

Flex Office Building

100 Industry Drive Partners—Pittsburgh, Pennsylvania

Design Principal 2009

Led concept design and provided ongoing design direction. The project involved a sustainable design workshop for and conceptual/schematic design of a 53,000 SF, single-story office/flex building shell. The design included a mix of masonry, metal panel, and glass, using a structural steel stud backup on the front façade, as well as masonry walls for the rear and side elevations. The desire was to create a sustainable, progressive design.

U.S. Embassies—Multiple Locations Worldwide

Design Principal 2005-2007

Led the design efforts for Integrated Planning Reviews (IPR) for multiple embassy projects

Millennium Technology Park
Lawrence County, Pennsylvania
Architect and Planner 2004

Provided architectural services for the design of a 2,000,000 SF electronics semiconductor fabrication facility including a 350,000 SF cleanroom with supporting office and flex facilities.

Renovations and Seismic Upgrades
Safeco Insurance Company—Fountain Valley, California
Lead Architect/Project Manager 1996-1997

Provided architectural design services for significant renovations and a seismic upgrade to existing facilities.

California Science Center
Exposition Park—Los Angeles, California
Architect 1995-1997

Provided architectural services for the north gallery and historical restoration; led the urban design and implementation for the Exposition Park and public art installations.

Peninsula Center Library
Palos Verdes, California
Lead Architect/Project Manager 1992-1996

Provided architectural design services for an 80,000 SF expansion, renovation, and seismic upgrade. This complex project won several design awards, and involved doubling the size of an existing midcentury modern library while upgrading the structure and completely renovating the existing facility to provide a seamless whole on a tight and severely sloped site. Work was designed to be constructed in phases so the library could remain in service throughout the entire process.

SafetyKleen Headquarters
SafetyKleen Corporation—Suburban Chicago, Illinois
Architect 1991

Provided architectural design services for the design of a corporate headquarters building.

High Rise Office Building
150 North Dearborn—Chicago, Illinois
Architect 1990

Provided architectural design services for the design of a 500,000 SF speculative office building in the Chicago loop.

Chicago Public Library Design Competition

Chicago, Illinois

Architect/Project Coordinator 1988

Provided architectural design services for a comprehensive 16-week competition for a 300,000 SF central library; involvement was focused on planning of interiors, design of exterior envelope, and the design of major public spaces.

High Rise Office Building

Market Tower—Indianapolis, Indiana

Architect 1985-1987

Provided architectural design services for the design of public spaces and the exterior envelope for a 500,000 SF high-rise just off of Monument Circle.

Frito Lay Corporate Headquarters

Frito-Lay Corporation—Plano, Texas

Intern Architect 1981-1984

Provided architectural design services for design of a 400,000 SF corporate headquarters building and interior design of the CEO's office suite.