

bkm



Summary of Qualifications Science & Technology Market Sector

working to enhance the everyday

About BKM

BKM is an engineering firm that listens. Backed by 58 years of responsive client experience and a shared commitment to collaboration, we design holistic MEP solutions that allow our clients to do their best work.

Based in Baltimore, Maryland, our team of 106 professional and technical staff includes 43 registered engineers, 21 EITs, and 23 LEED/WELL/Green Globes Accredited Professionals. Our engineers have extensive experience across mission critical, education, government, healthcare, science & technology, and commercial sectors, and are deeply knowledgeable of the codes and regulations our work must satisfy.

BKM was founded in 1968 with core values of transparency, responsiveness, extreme diligence, and the celebration of great ideas. Today, James L. Barrett, Jr., Mark A. Flickinger, and Anthony R. Page lead the firm with these values instilled in everything we do. From the management-level professionals actively involved in every project to the innovative solutions we develop for our clients, exceeding expectations is always our goal.

>50%

MEP Prime Work
Allocation

<1%

MEP Prime Change
Orders

50+

Years Providing
Science + Tech
Engineering Services

58

Years of Service
Excellence

43

Professional
Engineers

81%

Work from Repeat
Clients

Throughout the mid-Atlantic region—and nationwide—BKM’s work at data centers, schools, public safety buildings, research laboratories, medical centers, even Camden Yards is well established. We’re proud of that, but we’re more proud that our work helps each organization continue its work.

BKM’s Core Pillars

Collaboration is at our core.

With collaboration at our core and a 58-year legacy of responding to our clients’ needs, we design MEP solutions that harmonize with their surroundings and further our clients’ missions.

We’re engineers who listen.

Our people make BKM the company it is. We’re a dedicated team of creative people who genuinely enjoy each other and solving problems together. Most of all, we love turning challenges into smart, practical designs that allow our clients to do their best work.

We work to enhance the everyday.

Buildings are living spaces. At BKM, we respond to our clients’ needs with mechanical, electrical, and plumbing solutions designed to support everyday life.

Every project is a partnership.

Collaboration has been crucial to helping our clients succeed. That’s why our team brings openness, responsiveness, and a transparent design process to every project.

S&T Market Sector Overview

BKM’s Science & Technology (S&T) Market Sector offers a wide variety of technical experience, serving clients from Pharmaceuticals, Medical Device, Aerospace, Electronics, & everything in-between. Our wide experience and familiarity with designing buildings and space for novel technologies, keeps our staff engaged and constantly working with end-users to ensure each project is tailored to their specific needs.

We strive under not only understand the MEP system required for the project, but take our design a step further to understand the research or processes that are being conducted in each space

to ensure we provide a thoughtful design which accounts for budget and flexibility where possible as we understand technologies are constantly evolving. BKM’s S&T team operates as Prime Consultant on over 70% of our projects. Regardless of project size, we work to ensure we have the right team on each project, including consultants. We foster collaboration with our design team, consultants, end-users, facilities team and other stakeholders, to develop equipment matrices, user requirements and other critical documents where required.

BKM’s experience with designs for BSL-1 through 3 laboratories and cleanrooms ranging from ISO 5-8, allows us to apply these design requirements to fit each projects unique environmental, safety, resiliency and operational needs. The Science & Technology Market Sector’s typical building owner’s are Institutional, Universities or Government entities, however our S&T team also supports clients across many of BKM’s market sectors, including Higher Education, Healthcare, Municipal and Government sectors, to provide subject matter expertise and support to ensure all of our projects are staffed with industry experts.



Core Capabilities

Mechanical Design



We tailor our mechanical designs to meet the requirements of every project with a focus on indoor environmental quality, efficiency, maintainability, and flexibility. Our engineers recommend systems that will best serve the function of the space and provide the best possible environment for its occupants.

Electrical Design



At BKM, we understand the complexity of power systems and the responsibility owners face to provide service to a large number of users. Maintainability and energy efficiency are key aspects to our electrical system designs. Our engineers design safe, reliable, and efficient power distribution systems.

Plumbing Design



Our engineers are well versed in plumbing and piping design allowing clients to rest easy in knowing we are looking out for their best interests. As with all other systems, plumbing must suit the client's objectives for sustainability, user convenience, cost constraints, and space limitations.

Lighting Design



Proper lighting design strikes a careful balance between the artistic vision of a space and the comfort, safety, and aspirations of its occupants. BKM is dedicated to providing an attractive and streamlined lighting design that is fully coordinated, sustainable, and economically attainable for our clients.

Commissioning



BKM's commissioning process ensures the owner receives the full benefit of their building systems, which include inter-related automation systems to maximize energy efficiency and occupant comfort. Our goal is to provide the building manager with the training and experience to monitor the facility and be comfortable to modifying components to align with the changing needs throughout the building's life-cycle.

Building Assessments



Because of our thorough understanding of how the MEP systems are interrelated and how they affect decisions in other disciplines, our approach is inherently holistic. We can quickly recognize the positive and negative impacts of various decisions, helping our clients to work through the possibilities, clarify their vision, and then make it a reality.

Power Systems Studies



BKM understands the importance of electrical safety, maintenance, reliability, and asset protection within your facility. Our Power System Engineers specialize in load flow, fault current, coordination, protection, and arc flash studies. Our goal is to minimize your down time while maximizing protection of your assets and personnel.

Energy Modeling



BKM offers whole building energy analysis to satisfy the growing needs of building owners in an increasingly energy cost-conscious market. Building energy analysis plays a crucial role in the earliest stages of design, informing the building owner and design team of the true impact and value gained by various siting, envelope, and MEP systems design strategies. Services can be provided to address LEED/WELL requirements, building life cycle cost analysis, building energy code compliance, and utility incentives and rebates.

Special System Design



Our Special Systems team strives to deliver the technology backbone to support smarter, safer and more connected buildings. From structured cabling and network infrastructure to advanced security, audiovisual, and communication systems, we design solutions that empower organizations to operate with clarity, reliability, and confidence. Our approach blends engineering precision with forward-thinking innovation, ensuring every system works seamlessly today and is ready for the technology of tomorrow.

Science + Technology Leadership and Team



Jason M. Metzler, PE, LEED AP BD+C

Principal, Science & Technology Practice Leader

Jason is a registered Professional Engineer with experience in science & technology, higher education and healthcare market sectors. His prior experience has led him to work with numerous private sector clients to design cGMP cleanroom spaces and laboratories. He has worked on occupied, phased renovation projects as well as higher education lab conversion, energy optimization and space utilization studies. Working with various pharmaceutical clients, he has served as lead mechanical engineer and provides technical expertise to meet the clients needs.



Jason M. Frankie, PE

Project Manager, Senior Electrical Engineer

Jason is a licensed Professional Engineer with over 17 years of experience in the industry. His focus has been in the education, healthcare, and science and technology market sectors. He has worked on occupied, phased renovation projects in educational facilities and comparable buildings related to student life, administration, and classrooms. His design knowledge includes normal and emergency power distribution, lighting, special systems and fire alarm.



Mike F. Schillenberg, PE

Project Manager, Senior Mechanical Engineer

Mike is a registered professional engineer with over 18 years of diverse experience in mechanical design and project management. His expertise includes experience in the Higher Education and Science & Technology market sectors. Mike provides extensive knowledge on mechanical systems, mechanical equipment, and energy savings techniques. He believes that collaboration and teamwork are what make great projects. He continues to build on his strong relationships with existing clients as well as building new ones.



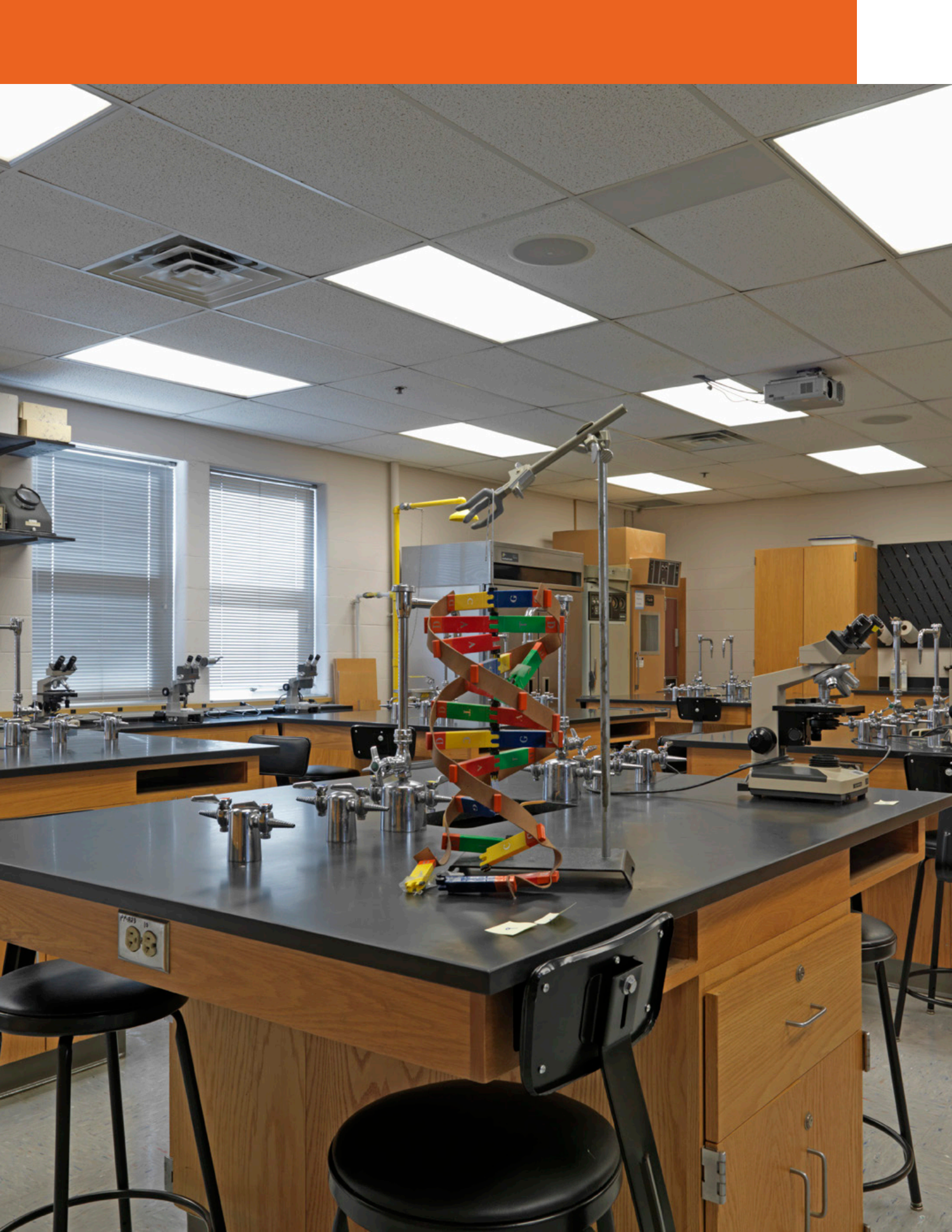
Eric W. Erbelding, PE

Senior Mechanical Engineer

Eric is a registered professional engineer with over 13 years of diverse experience in mechanical design, including experience with K-12, Higher Education, and Science & Technology market sectors. Eric consistently serves as the Lead Mechanical Engineer on several Science & Technology term contracts, building strong relationships with owners and providing technical expertise to meet the client's needs.

The image features a minimalist design with three main color blocks: a large orange rectangle on the right, a white rectangle on the left, and a blue rectangle at the bottom left. The text 'Higher Education Experience' is centered in the orange area in a bold, white, sans-serif font.

Higher Education Experience



Laboratory Project Sampling: Renovation



As prime consultant, BKM led a team for a multi-phase renovation of the 27,500 SF Morris Marine Lab.

Starting with a comprehensive master planning study and then design was performed to implement systemic MEP and architectural upgrades required to serve a revised laboratory program. New air handling systems were provided along with exhaust systems to serve fume hoods in each lab and general exhaust requirements.



The existing Dragun Science Building is one of the original core buildings on the campus of Anne Arundel Community College.

The 53,000 SF Chemistry and Physical Science building is pursuing a LEED Gold certification as a part of a full building renovation. The renovation includes a new mechanical penthouse and installation of new HVAC and lighting to make this a state-of-art science building .



BKM provided mechanical and electrical design services for the tenant fit-out of approximately 9,900 SF

Additional spaces included: a shared wet lab space, two conference rooms, 11 offices, copy/print support space, a shared kitchen/pantry, open office spaces, storage space, and IT/LAN room.



BKM provided MEP engineering and low voltage infrastructure design for the renovation of the 1,300 SF Speller Lab located in the Bloomberg Center for Physics & Astronomy.

The renovation included the addition of a dilution refrigerator with a magnet requiring specialized construction in its vicinity. A laser room, temporary clean space and wet lab space, were all required support the research of this lab.

Laboratory Project Sampling: Vivarium



Allen Lab Chiller Replacement and HVAC Upgrades | Newark, DE

MEP design services for this 25,500 SF, three story animal research laboratory located on a university campus. The facility houses poultry research spaces, including several BSL-3 laboratories.

The project included a phased replacement of existing chillers, including temporary provisions for power and cooling to limit impact to research. The project also included replacement to the existing air handling units heating and humidification capabilities.



625 Lab Relocation | Baltimore, MD

BKM provided MEP engineering for the relocation and renovation of the existing neurological and behavior research suite for Johns Hopkins University.

The design included the relocation and renovation of vivarium spaces, including an animal holding area, surgical lab, behavioral testing rooms and offices.



Krieger Hall Animal Lab Renovation | Baltimore, MD

BKM provided MEP design services to renovate 800 SF of Krieger Hall on the JHU Homewood campus to support new Animal Care Laboratories.

The new laboratories include vivarium animal facilities. The HVAC design included a new air-cooled heat pump and air handling unit for precise temperature control.



HVAC Masterplan For College of Medicine | Hershey, PA

BKM provided MEP masterplanning services for numerous HVAC systems for Penn State Hershey's College of Medicine Building

BKM developed a masterplan, sequencing and phasing plans to replace 17 built-up AHUs, and consolidation exhaust fans. The study was completed in order to develop budgeting for the College of Medicine for the next decade.

Laboratory Project Sampling: Energy



Wolfe Street TR3 Labs | Baltimore, MD

BKM provided prime MEP services for conversion of supply air terminal units and fume hoods from constant volume to variable volume for 26 labs in TR3, spanning 62,000 SF.

The project resulted in a utility rebate, and a less than 3 year payback. New control devices were added to the existing constant volume supply and return air terminal units to change them to variable flow operation.



Colburn Lab Airflow Reduction | Newark, DE

Project was a renovation of approximately 27,000 SF an existing facility to incorporate laboratory airflow reduction energy conservation measures.

Airflows and space pressurization were documented, and existing HVAC floor plans were modified to develop new space pressurization plans.



Brown Laboratory Energy Conservation Measures | Newark, DE

BKM provided MEP design services as the prime consultant for the renovation of the Brown Laboratory building on the University of Delaware campus.

The project aimed to redesign laboratory and chemical fume hood airflows to provide better ventilation, higher airflow performance, and reduced building energy consumption. The renovation involved all portions of the four-story building, covering approximately 134,000 SF, with most of that area being laboratory spaces.



Building Automation System Upgrade | Baltimore, MD

BKM provided services to upgrade the controls building automation system (BAS) in the existing 72,000 SF North Wing of Johns Hopkins Bloomberg School of Public Health (BSPH) to new Tridium Niagara based controls.

The North Wing of BSPH encompasses ten floors including basement and penthouse levels, and consists primarily of laboratory and office space.

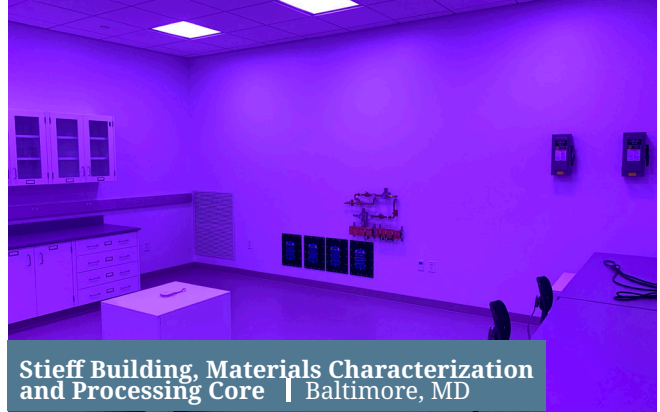
Cleanroom Project Sampling



Center for Translational Molecular Imaging | Baltimore, MD

BKM provided MEP design services for the Center for Translational Molecular Imaging (CTMI) project that was constructed within G Building on the campus of Johns Hopkins Bayview Medical Center (JHBMC).

The 4,200 SF space that houses ISO 7 and ISO 6 current Good Manufacturing Practices (cGMP) cleanrooms, research and development labs to support the cleanroom manufacturing, and PET/MR imaging suite.



Stieff Building, Materials Characterization and Processing Core | Baltimore, MD

The new Materials Characterization and Processing Labs at the Stieff-Silver building were design to be state-of-the-art lab spaces to support new research in electron microscopy.

The spaces were designed in accordance with the requirements of ISO 6 Cleanrooms and also required controlled HVAC airflow velocities and stable temperature profiles within +/- 0.2 degrees Celsius.



Bressler Ninth Floor Clean Room-GMP Facility | Baltimore, MD

BKM provided MEP services for an ISO 7 current good manufacturing practice (cGMP) facility used in conjunction with the University of Maryland Baltimore School of Medicine

The HVAC system was designed to provide stringent temperature and relative humidity conditions in the production clean rooms and positive space pressurization with respect to the adjacent non-classified spaces.



Hannan Hall Cleanroom Renovation | Washington, DC

BKM was the prime consultant and provided MEP design services for the Catholic University Hannan Hall Cleanroom Renovation.

BKM lead the design of a fit-out of a new ISO 8 cleanroom, which also consisted of modifications to the existing house HVAC system. The cleanroom was designed to accommodate semi-conductor and electronic research by the user group.

Institutional Experience



Laboratory Project Sampling



Architectural and Engineering Services at the Delaware Innovation Space (DIS) | Wilmington, DE

BKM provided MEP services for the renovation of 6,000 SF of laboratory space and 4,000 SF of administrative and common amenities space in the existing 140,000 SF facility

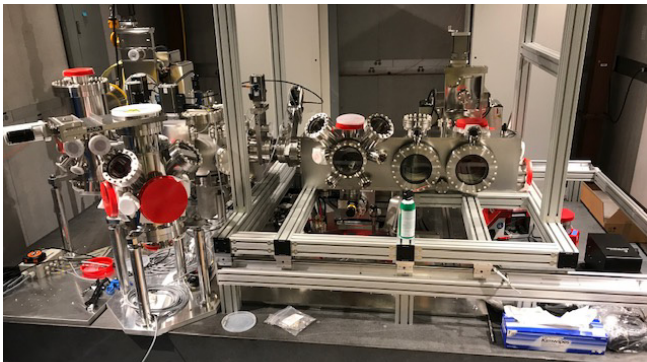
The project is to create an “innovation space” and research incubator to support multiple new, small research groups.



Microscopy Labs 2W254-257 & 2C305 | Ashburn, VA

BKM provided MEP engineering for the renovation/conversion of existing spaces to Microscopy Imaging Labs located in the Janelia Research Campus of Howard Hughes Medical Institute, in Ashburn, VA.

BKM led the design to provide new labs spaces with multiple laser tables, which include strict temperature stability and lighting requirements.



Helium Recovery System | Gaithersburg, MD

BKM designed a Helium Recovery System for the National Institute of Standards and Technology.

The project included 12 advanced measurement laboratories, 15 helium recovery points, high pressure recovery plant, 600 cuft / 23 L liquid, safety/quality analysis, oxygen/helium monitoring and flow/purity metering.



NanoFab Cleanroom Rebalance | Gaithersburg, MD

The project includes replacement of over 1,200 HEPA filters, rebalancing, recommissioning and recertification of the NanoFAB cleanroom, including upgrades to the air handling and exhaust systems.

The NanoFab cleanroom facility supports 20,000 SF of cleanroom including 8,000 SF of Class 100 space.

Confidential Client Project Sampling

Project Highlight

BKM provided Prime MEP services for a confidential institutional client for a renovation of an unoccupied secure space to convert the existing office space into a secure Biosafety 2 lab (BSL-2).

The 9,100 SF renovation included two separate secure BSL-2 suites supported by segregated HVAC, power and security, IT, and control systems. An additional unclassified BSL-2 suite was provided to support unclassified activities. Each suite consisted of smaller specialized spaces for chemical & DNA manipulation or viral & mammal cell culture. 100% outside air rooftop units with energy recovery provided ventilation, temperature/humidity control, and pressurization for the spaces in conjunction with localized lab controls to maintain strict space parameters. Individual exhaust fans were provided for fume hoods and class II B2 biosafety cabinets.

A new gas-fired domestic water heater was provided to support new sinks, emergency fixtures, and autoclaves. At each sink, a point-of-use acid neutralization system on the sanitary piping was provided, as well as a deionized water system to provide 18 meg-ohm water. Power filtering was provided for each suite. Power for dedicated lab equipment, convenience receptacles, and new gasketed lighting fixtures were provided within the labs. In addition to the BSL-2 suites, a new aquatics lab was included, which consisted of new plumbing to support saltwater tanks within the space. The new HVAC and space build-out includes stainless steel materials to prevent corrosion. Support spaces, including a computer room, conference room, and telecom room, were provided, including secure provisions for the future.



Additional Confidential Project Listing

- Printed Circuit Board Facility – Confidential Client
- Processing Lab Renovation – Confidential Client
- Chemical Lab Refresh – Confidential Client
- Lab Condenser Water Upgrades – Confidential Client
- Aerospace Cleanroom Facility - Deferred Maintenance Upgrades – Confidential Client
- Secure Aerospace ISO 8 Cleanroom Upgrades - Confidential client

*Photos that are featured are stock images

Private Experience



Laboratory Project Sampling



Quest Diagnostics Phleb Lab | Richmond, VA

BKM provided MEP design for a new phlebotomy and processing facility.

The fit-out included new HVAC to support patient, employee, and lab spaces. Plumbing and electrical utilities were extended to support the new occupancy.



BSL-3 Tuberculosis Lab | Hunt Valley, MD

BKM served as prime consultant for a TB research and development facility that is housed within a larger research and manufacturing building.

HVAC systems included redundant exhaust systems, emergency power back-up and a robust monitoring and control system to ensure continuous negative pressurization and containment of exotic agents.



Building 7102 Renovation | Columbia, MD

BKM provided MEP engineering services and is the Prime consultant for the renovation of 63,000 square feet of an existing lab and office building.

The renovation includes the in-fill of an existing courtyard to create a new showcase lab space to display Shimadzu's products in an active lab space. The renovation also include reprogramming the layout of the building's departments, and creating new R&D, service, marketing and measurement labs.



Shimadzu Lab Renovations | Columbia, MD

BKM provided MEP design services for the that showcase laboratory suite serves both as a training facility for customers and as a fully equipped and functional research and development laboratory.

The 4,100-square-foot facility included a flexible, high-tech layout for the development of analytical instrumentation used around the world.

Becton Dickinson Project Listing

BKM has provided design and consulting services for Becton Dickinson for 15+ years, including projects from infrastructure studies and upgrades to new GMP cleanrooms. We value the relationships we build with our clients and continue to support their every changing facility needs.

PROJECT NAME

250 Schilling Circle, Steam System Upgrades
250 Schilling Circle, Boiler Feed System Replacement
250 Schilling Circle, Chilled Water System Study
250 Schilling Circle, Compressed Air Cooling System Conversion
250 Schilling Circle, Compressed Air Life Cycle Cost
250 Schilling Circle, Compressed Air System - Piping Modifications
250 Schilling Circle, CP Lab Dehumidification
250 Schilling Circle, Heating Water System Survey & Study
250 Schilling Circle, High Volume Cleanroom Pressurization
250 Schilling Circle, Low Volume Cleanroom Pressurization
250 Schilling Circle, LV ISO 6 Expansion
250 Schilling Circle, New Elevator
250 Schilling Circle, New Low Volume Cleanroom - New Work - Phase 1
250 Schilling Circle, New Low Volume Cleanroom - New Work - Phase 2
250 Schilling Circle, Plates Fill Dehumidification Analysis
250 Schilling Circle, Roof Drainage Upgrades
250 Schilling Circle, Steam System Survey
26 Loveton Circle, Indoor Air Quality Study
26 Loveton Circle, Structural Evaluations
26 Loveton Replace Air Conditioning Units for FDA-Regulated Cold Storage
39 Loveton Circle, Access Easement Plats
39 Loveton Circle, Process Steam Boiler System Upgrades
52 Loveton Circle, Cleanroom and Warehouse Renovations
52 Loveton Circle, Existing Clean Room AHU Assessment
54 Loveton Circle, Office Renovations
7 Loveton Circle, Boiler Replacement (Phase 1)
EL Paso IPA Material Pass Through Modifications
7 Loveton Circle, BSL-3 Laboratory
7 Loveton Circle, Fire Rating Evaluation
7 Loveton Circle, IME Phase 2 Value Engineering
7 Loveton Circle, Affirm Modifications
7 Loveton Circle, AHU-133 Acoustic Evaluation
7 Loveton Circle, Air Handling Unit AHU-109 Modifications
7 Loveton Circle, Boiler Replacement (Phase 2)
7 Loveton Circle, East Wing New Generator
7 Loveton Circle, Instrument Manufacturing Autoclave
7 Loveton Circle, Instrument Manufacturing Expansion (Phase 1)
7 Loveton Circle, Instrument Manufacturing Expansion (Phase 2)
7 Loveton Circle, Phoenix Line 3 Cleanroom Dehumidification
7 Loveton Circle, Renovation of Room 1012
Advanced Bioprocessing (AB) Lab Relocation
AHU Modifications
Biosciences Liquid Media - Phase I
Boiler Room Combustion Air
Building 39 Dyes and Stains - Modification No. 1 - HRU-3
Building 39 Dyes and Stains Warehouse
Instrument Manufacturing Expansion
Liquid Media Department Modifications (Study)
Liquid Media Renovation
New Elevator Feasibility Study
7 Loveton BSL-2 Relocation
Replace AHU-205 & AHU-207
El Paso IPA Bulk Storage

Cleanroom Project Sampling



Projects included manufacturing of a new product line, clean rooms meeting current good manufacturing practices (cGMP) criteria, along with support laboratories and administrative space, were designed and constructed having a total square footage of more than 15,000 SF.

Each of the clean room areas was designed to maintain low relative humidity requirements to satisfy product requirements.



BKM provided MEP services for the renovation of 1,350-square-feet of ISO 6 cleanroom space and 175-square-feet of media preparation support area in an existing pharmaceutical diagnostics manufacturing facility.

The renovated 1,350-square-foot ISO 6 cleanroom which utilized a desiccant dehumidifier to maintain 59°F and 50% relative humidity environmental conditions. Expansion of the existing media preparation facilities included new clean utilities to serve new production kettles and sterilizers for sterile media production.



BKM provided design services for a two-phase clean room and support space including ISO 5, ISO 6, and ISO 7 clean room spaces for FDA-regulated pharmaceutical manufacturing and aseptic filling.

The clean room including desiccant dehumidification equipment to achieve a space environment of 59 degrees Fahrenheit at 50 percent relative humidity. Phase 2 was constructed to combine the two ISO-6 spaces while Phase 1 remained in production with minimum downtime. Support spaces included process kettles, HTSTs, lyophilizers, pass-through autoclaves, and other specialized equipment.



Project included the construction of an ISO 7 clean space for the manufacturing of the bio-medical device.

The new 900 SF clean room was supplied by a roof-mounted institutional grade air handling unit to maintain stringent temperature and relative humidity controls with 50 air changes per hour to terminal HEPA filter modules in the ceiling.

Private Support Spaces



MEP design services for Emergent Biosolutions, Inc. The 41,000 SF mixed-use tenant space was renovated for Emergent's new office space, document control, and GMP warehouse, next to their existing manufacturing plant

The renovation of office space to create a quality assurance office included new rooftop air handling units with variable air volume reheat terminals for occupant comfort.



BKM provided MEP engineering services for the installation of 37 new upright -80C freezers for a Biorepository Service company

The space was renovated from an existing cleanroom facility to an open warehouse to allow for the expansion of additional freezer storage space. Emergency power circuits and dedicated cooling were added for the expansion to the repository.



The project consists of a 1,200 SF renovation in a production facility in El Paso, TX. The renovation included fit-out of a new ISO 7 cleanroom High Hazard for the storage of Isopropyl Alcohol.

The design includes renovation of MEP equipment and air distribution related to the space, and process piping for delivery and transfer of IPA into two 5,000-gallon tanks for bulk storage and formulation.



BKM provided MEP design for a multi-phase electrical upgrade to an existing pharmaceutical manufacturing facility.

The scope included design of a second power distribution pathway including switchboard, manual transfer switches, transformers and panelboards to allow for concurrent maintenance of mechanical HVAC distribution equipment supporting GMP manufacturing.

Jason M. Metzler, PE, LEED AP BD+C
Principal, Science & Technology Practice Leader
jmetzler@bkma.com
443.632.1282

bkma.com

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