NEW YORK STATE
LIFE SCIENCES PUBLIC HEALTH LABORATORY

BASIS OF DESIGN

EXECUTIVE SUMMARY

NEW YORK STATE DEPARTMENT OF HEALTH

DORMITORY AUTHORITY OF THE STATE OF NEW YORK

EMPIRE STATE DEVELOPMENT

MAY 16, 2019

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

BACKGROUND

The Wadsworth Center is the public health laboratory for the State of New York. It is one of the nation's preeminent state public health laboratories, providing a broad range of highly technical and specialized diagnostic, surveillance and research activities as well as laboratory certification and educational programs, all directed towards protecting the health and well-being of the citizens of New York State. The Wadsworth Center is a leader in the development and application of new public health technologies. Pioneering applied and basic public health research and development done at the Wadsworth Center has broad public health impact well beyond the state of New York, frequently impacting the establishment of national and international standards for public health policy and practice.

The Wadsworth Center is organized into 1 administrative, 4 scientific (Environmental Health Sciences, Genetics, Infectious Diseases, Translational Medicine), and 1 regulatory Divisions, all under the overall supervision of the Director's Office. Programs within these Divisions cover a broad range of public health activities, including:

- Environmental Health Testing and Surveillance
- Newborn Screening
- Infectious Diseases Detection and Surveillance
- Public Health-Related Applied and Basic Research
- Laboratory Oversight and Regulation
- Extramural Grants Administration
- Education and Training

FUTURE VISION

The New York State Life Sciences Public Health Laboratory is envisioned to be a state-of-the-art laboratory facility serving the needs of New York State for the next 50 years. It will be a key state asset to support and improve public health by providing critical clinical and environmental testing needs for the future of New York State.

The New York State Life Sciences Public Health Laboratory will centralize and consolidate laboratory operations from the current five locations spread across the Capital Region (occupying over 900,000 square feet) to one highly efficient laboratory campus (occupying ~750,000 square feet). Consolidation into a new, state-of-the-art laboratory will provide many benefits, including:

- Improved surge capacity and crisis management responses during public health emergencies
- Necessary enhancements needed to meet emerging public health threats
- Improved efficiencies to testing processes
- Enhanced economic development and improved public health through public-private partnerships with pharmaceutical and biotechnology companies
- Improved competitiveness for research funding
- Reduced cost of operations, maintenance, training and security
- Increased personnel efficiency
- Reduced risk from biological, chemical and other laboratory hazards

BASIS OF DESIGN

This document is a Basis of Design (BOD) that establishes the design criteria for the New York State Life Sciences Public Health Laboratory, including program requirements, site development needs, and operational and functional requirements. The intent of this BOD is to envision the New York State Life Sciences Public Health Laboratory within a proposed site located on the Harriman campus in Albany, NY. The laboratory will be part of a complex composed of the following facilities:

- Main Laboratory Building
- Trans-Shipping & Warehouse Facility
- All Hazards Receipt Facility
- Central Utility Plant
- Vehicle and Equipment Maintenance Garage
- Security Checkpoint Gatehouses
- Surface Parking

Within these multiple facility typologies, there will be many space types. Laboratory spaces will include basic biology and chemistry labs, vivarium space, high containment standard (BSL-3), animal (ABSL-3), and insectary (ACL-3) infectious disease labs, light and electron microscopy imaging labs, particulate clean rooms, and nuclear chemistry labs. Laboratory support spaces will include instrumentation labs, environmental rooms, a warehousing facility, a large freezer storage area, and facilities management maintenance and repair shops. Finally, amenities space will include offices, conference rooms, classrooms, collaboration spaces, a large auditorium, kitchenettes and a cafeteria. All these facilities and space types requirements are defined within this Basis of Design document and are primarily performance based, thus allowing the selected design team broad creative flexibility.

The site is a 27-acre parcel of land in the southeast corner of the Harriman Campus in Albany, New York. This location provides proximity to major highways, facilitating the receipt and shipping of diagnostic specimens as well as access by laboratory staff, and also includes space for private partners and future economic development.

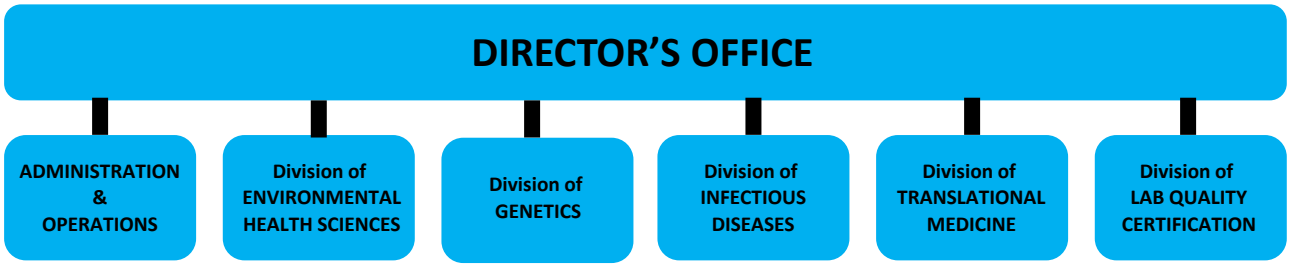
2 PROGRAM SUMMARY

The New York State Life Sciences Public Health Laboratory will serve the public health needs of the New York State Department of Health for the next 50 years. The new facility will be occupied by the Wadsworth Center, the laboratory division of the New York State Department of Health. This section of the Basis of Design Executive Summary outlines the activities, space types, and compliance requirements for the various programs carried out by the Wadsworth Center and provides a brief overview of the buildings that will constitute the Life Sciences Public Health Laboratory complex.

DEPARTMENT OF HEALTH - WADSWORTH CENTER

The Wadsworth Center is one of the nation's preeminent state public health laboratories, providing a broad range of highly technical and specialized diagnostic, surveillance and research activities, all directed towards protecting the health and well-being of the citizens of New York State.

The Wadsworth Center is organized into 1 administrative, 4 scientific, and 1 regulatory Divisions, all under the overall supervision of the Director's Office, as illustrated below.



Programs within these Divisions cover a broad range of public health activities, including:

- Environmental Health Testing and Surveillance
- Newborn Screening
- Infectious Diseases Detection and Surveillance
- Public Health-Related Applied and Basic Research
- Laboratory Oversight and Regulation
- Extramural Grants Administration
- Education and Training

ADMINISTRATION AND OPERATIONS

The Wadsworth Center's Administration and Operations staff oversee all functions of the Center, including management of the laboratory Divisions, extramural grant administration, fiscal contracts and purchasing, mail and asset management, facilities management and building operations, amenities, information technology services, library services, safety and security, centralized support services (see below), veterinary sciences program (ABSL-2 and ABSL-3 vivaria), shared research BSL-3 facilities, and the scientific cores. The operation of these spaces must comply with all applicable regulations and regulatory agencies, including:

HIPAA, CLIA, CLEP, ELAP, EPA, DEC, USDA, AAALAC, CDC, NRC and other national, state and local regulatory organizations as identified as well as all applicable national guidance documents such as the BMBL.

Centralized Support Services. There are numerous operations and services that support all laboratory functions throughout the Center. The areas include but are not limited to:

Director's Office

- Safety Office
  - Biological, Chemical, Radiation Safety Programs
  - Hazardous & Regulated Medical Waste Management
- Security Office
- Quality Assurance

Administration

- Amenities
  - Auditorium
  - Conference Rooms
- Mail Room/Shipping Services
- Supply Warehouse
- Central Cylinder/Gas Storage
- Long-term Storage

Laboratory Operations

- Facilities Management
  - Maintenance/Operations/Engineering
  - Waste Management/Recycling
  - Instrumentation/Automation
  - Grounds/Custodial
  - Central Utility Plant/Generators
  - Parking
  - Freezer Farm
- Glassware/Sterilization
- Veterinary Sciences
- Library
- Information Technology Services

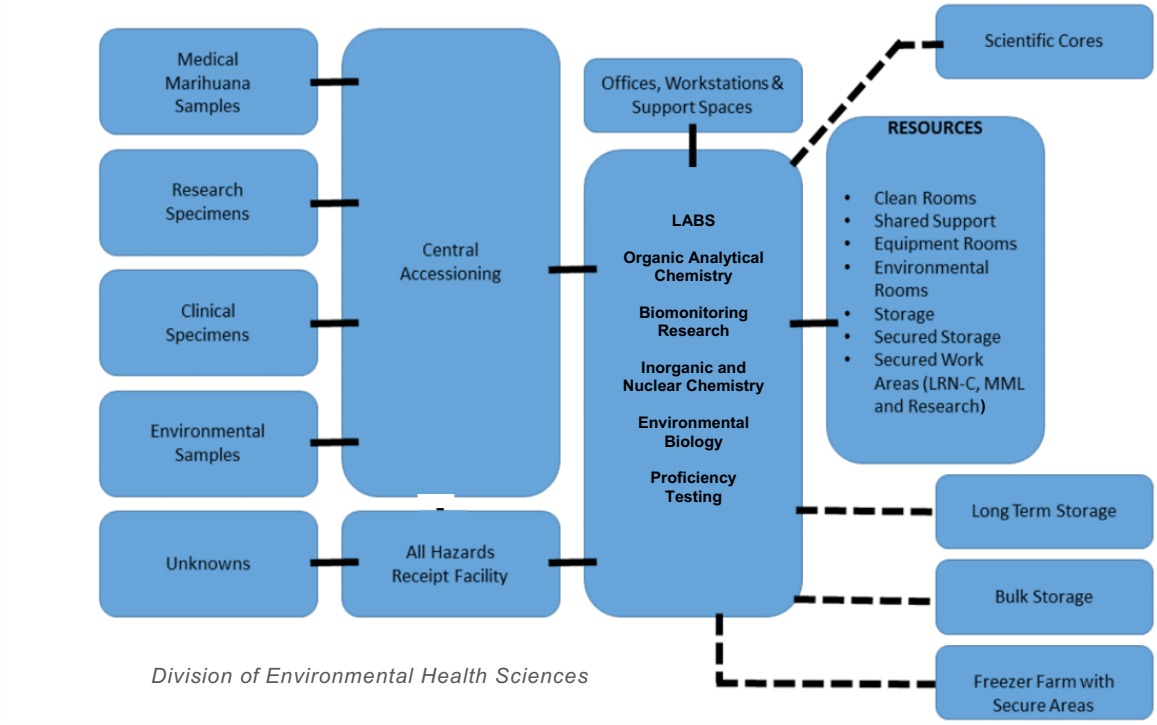
Scientific Cores. Administration and Operations oversees the scientific cores, which provide services for all Wadsworth Center Scientific Divisions. The scientific cores include:

- Advanced Light Microscopy and Imaging
- Applied Genomic Technologies Cluster
- Biochemistry and Immunology
- Bioinformatics
- Electron Microscopy
- Histopathology
- Protein Expression
- Tissue Culture and Media

DIVISION OF ENVIRONMENTAL HEALTH SCIENCES

Laboratories in the Division of Environmental Health Sciences provide routine and emergency public health testing and surveillance; produce and validate proficiency testing samples prepared as part of the Environmental Laboratory Approval Program; and carry out externally funded research.

As a Federal Environmental Protection Agency Principal State Laboratory, the Wadsworth Center's environmental testing laboratories serve as the state's reference laboratory, and are fully accredited by the State of Florida Department of Health Environmental Laboratory Certification Program and the State of New York Department of Health Environmental Laboratory Approval Program (ELAP) for the analysis of water, air, soil and medical marihuana samples for multiple toxic chemicals, infectious agents, and radioactive contaminants. Wadsworth Center scientists develop sophisticated environmental tests in highly specialized areas that are not available in commercial laboratories due to cost, low demand, or complexity. Laboratories in this Division are also charged with monitoring the environment surrounding the state's nuclear power plants and other nuclear facilities.



Division of Environmental Health Sciences

Laboratories in the Division of Environmental Health Sciences participate in numerous national and state laboratory networks designed to enhance emergency preparedness in public health, including the CDC Laboratory Response Network for Chemical Threats, the EPA Environmental Response Laboratory Network, the USDA and FDA Food Emergency Response Network, and the New York State Bureau of Environmental Radiation Protection.

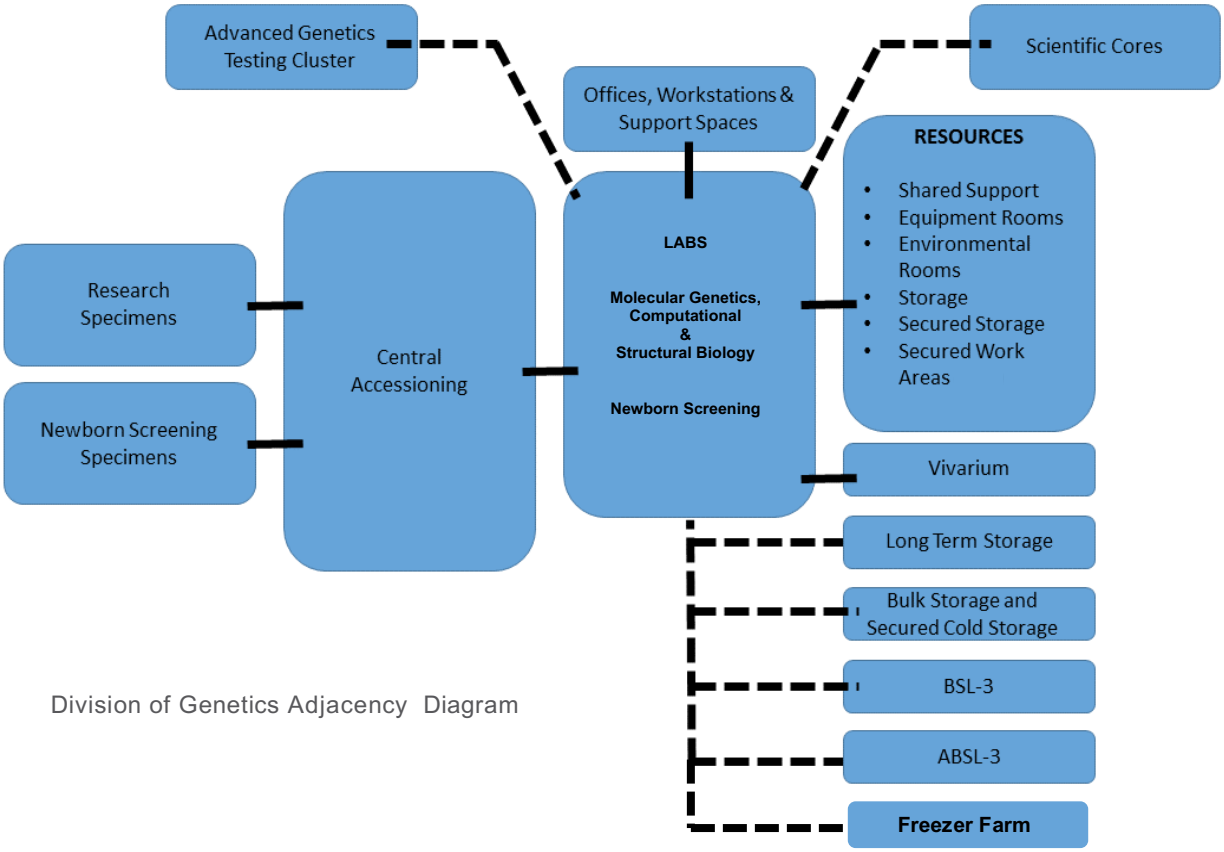
In addition to applied research directed towards advancing the Division's testing activities, the Division also carries out externally funded research. Researchers investigate human exposure to toxic chemicals via analysis of both environmental and human samples. Human biomonitoring is a major area of the Division's research expertise in which internal exposure levels to environmental contaminants is assessed by analyzing human tissues and body fluids including blood, urine, fat, and saliva for chemical contaminants such as persistent organic pollutants, heavy metals and emerging contaminants of concern. Atmospheric chemists in the Division investigate the critical role gaseous and particulate pollutants play in the formation of oxidants and smog, and the impact such air pollution has on human health. Finally,

nuclear chemists develop new, more sensitive methodologies to detect ionizing radiation in complex environmental, food, and biological samples.

The Division of Environmental Health Sciences will have spaces for 12 Programs organized within 5 Laboratories: Organic Analytical Chemistry, Inorganic & Nuclear Chemistry, Environmental Biology and Proficiency Testing. These spaces will consist of offices, chemistry sample preparation labs, chemistry analytical labs, BSL-2 biology labs, ISO 5 and ISO 7 clean rooms, and lab support rooms. Numerous programs in the Division will require secured space. The operation of these spaces must comply with all applicable regulations and regulatory agencies, including, but not limited to, HIPAA, CLIA, CLEP, CDC, EPA and ELAP, as well as all applicable national guidance documents such as the BMBL.

DIVISION OF GENETICS

Laboratories in the Division of Genetics include both clinical and research programs. The Division includes the Newborn Screening Program, the Wadsworth Center's largest testing program. The functions of the program are mandated by New York State Public Health Law. Blood spots are taken shortly after birth from every infant born in New York State and sent to the Wadsworth Center for testing. The lab screens ~250,000 infants every year for 47 genetic disorders. Early identification of



Division of Genetics Adjacency Diagram

children at increased risk of disease allows medical treatment to begin as quickly as possible, thereby preventing, or significantly reducing, disease symptoms. Such interventions vastly improve health outcomes for afflicted children. At the same time, the Newborn Screening Program helps reduce healthcare costs associated with potentially lifelong care for these children.

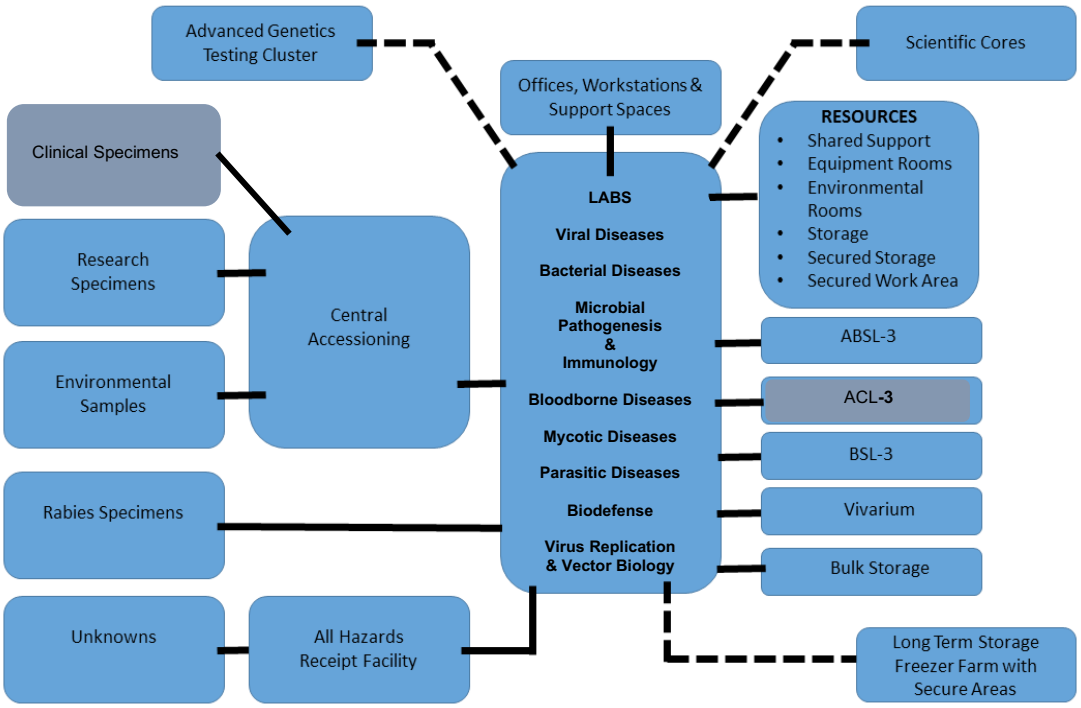
In addition to applied research directed towards advancing the Division's Newborn Screening activities, this Division also carries out externally funded research in the areas of molecular genetics and computational and structural biology. Researchers elucidate mechanisms of bacterial resistance to current antibiotics and identify novel targets for the next generation of antibiotic drugs with particular focus on Mycobacterium tuberculosis. Innovative molecular-genetic, genomic, structural, and bioinformatic tools are used in bacterial, yeast, and mouse model systems to elucidate fundamental molecular mechanisms involved in regulating gene expression, mobile genetic elements, DNA replication, and neural development.

The Division of Genetics will have spaces for 3 Programs organized within 2 Laboratories: Molecular Genetics/Computational & Structural Biology and Newborn Screening. These spaces will consist of offices, BSL-2 laboratories, and lab support rooms. A number of programs will also make use of BSL-3 laboratory space as well as ABSL-2 and ABSL-3 vivarium space. The operation of these spaces must comply with all applicable regulations and regulatory agencies, including, but not limited to, HIPAA, CLIA, CLEP and AAALAC, as well as all applicable national guidance documents such as the BMBL.

DIVISION OF INFECTIOUS DISEASES

Laboratories in the Division of Infectious Diseases provide routine and emergency public health testing and surveillance for infectious disease agents, including pathogenic bacteria, viruses, fungi, and parasites. Examples of some of these pathogens and the diseases they cause include Zika virus, anthrax, West Nile virus, Legionella, Lyme disease, rabies, Salmonella, E. coli O157:H7, tuberculosis, and meningitis, among many other pathogens routinely tested for by the Division. Clinical and environmental samples are tested during disease outbreaks as well as when specific laboratory testing is not available elsewhere in the state. Next-generation genomic sequencing of infectious agents allows the definitive tracing of a contaminated food source with patient diseases. Rapid and sophisticated testing has enabled early intervention during many serious disease outbreaks, helping to reduce the spread of disease.

The Wadsworth Center participates in several national networks designed to enhance emergency preparedness in public health in the event of a terrorist attack using chemical, microbiological or radiological warfare agents. As part of those activities, laboratories in the Division of Infectious Diseases participate in the CDC's Lab Response Network for Biological Threats. In addition, the testing laboratories also play a vital role in the New York State Health Department's mandated Reporting Communicable Diseases process by utilizing advanced reference testing methods to confirm laboratory diagnoses of reportable diseases.



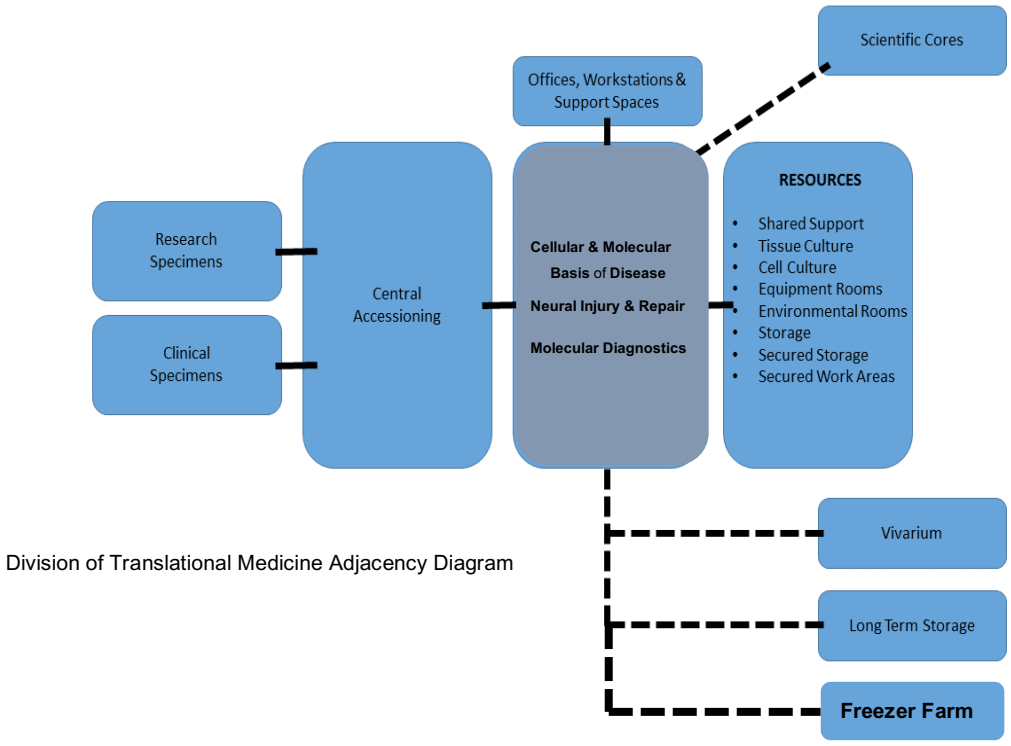
Division of Infectious Diseases Adjacency Diagram

In addition to applied research directed towards advancing the Division's testing activities, the Division also carries out externally funded research. Researchers investigate a wide range of questions related to infectious diseases and immunology. Studies of zoonotic disease pathogens focus on pathogen-host-vector interactions that drive disease emergence, including mosquito-transmitted pathogens/diseases such as West Nile virus, Zika virus, and malaria as well as tick-transmitted pathogens/diseases such as Lyme disease and Powassan virus. Molecular details of bacterial pathogenesis are investigated with strengths in understanding Mycobacteria-host interactions and the host immune response to enteric pathogens such as bacteria Salmonella and Shigella, and fungal pathogen Candida. Finally, the impact that host genetic susceptibility and environmental stress have on neuroimmunological and immunotoxicological aspects of autoimmune diseases, immune deficiencies, and neurobehavioral illnesses are investigated.

The Division of Infectious Disease will have spaces for 11 Programs organized within 8 Laboratories: Viral Diseases, Bacterial Diseases, Microbial Pathogenesis and Immunology, Bloodborne Diseases, Mycotic Diseases, Parasitic Diseases, Biodefense, and Viral Replication & Vector Biology. These spaces will consist of office, BSL-2, BSL-3 and ACL-3 laboratories and lab support rooms. A number of programs will also make use of ABSL-2 and ABSL-3 vivarium space. The operation of these spaces must comply with all applicable regulations and regulatory agencies, including, but not limited to, HIPAA, CLIA, CLEP, ELAP and AAALAC, as well as all applicable national guidance documents such as the BMBL.

DIVISION OF TRANSLATIONAL MEDICINE

Laboratories in the Division of Translational Medicine use cutting-edge structural and cell biology techniques, including cryo-electron microscopy, advanced light microscopy, nuclear magnetic resonance spectroscopy, neuro-electrophysiology and brain-computer interfaces, to investigate fundamental cellular processes in normal and disease conditions. Their studies provide molecular detail of interactions between cellular components involved in cell division, cellular locomotion, cellular signaling, protein synthesis, protein structure, cancer, and neural function. The overall research goal is to better understand the molecular etiology of disease in order to identify new drug targets and/or treatment modalities to reduce the incidence and severity of disease.



Division of Translational Medicine Adjacency Diagram

Within the Division is the Wadsworth Center-based National Center for Adaptive Neurotechnologies where scientists work to develop powerful new research tools and therapeutic methods to restore useful function to people disabled by spinal cord injury and neurodegenerative disease. Strong emphasis is placed on translating basic scientific advances achieved in the laboratory into clinical studies in humans, and ultimately, into clinical practice.

The Division of Translational Medicine will have spaces for 3 Programs organized into 3 Laboratories: Cellular and Molecular Basis of Disease, Neural Injury and Repair, and Molecular Diagnostics. These spaces will consist of offices, BSL-2 labs, and lab support rooms. A number of programs will also make use of ABSL-2 vivarium space and extensive use of the electron microscopy suite. The operation of these spaces must comply with all applicable regulations and regulatory agencies, including, but not limited to, HIPAA and AAALAC.

DIVISION OF LABORATORY QUALITY CERTIFICATION

The Division of Laboratory Quality Certification provides regulatory oversight of laboratories operating in New York State. Those programs include:

- *Clinical Laboratories Program.* Oversight of laboratories conducting clinical or forensic testing on specimens originating in New York State.
- *Physician's Office Laboratory Evaluation Program.* Manage evaluation of laboratories located in physician's offices.
- *Tissue Resources Program.* Oversight of tissue banking activities and services provided in New York State.
- *Breath Alcohol Permit Program*. Regulate aspects of alcohol testing as established under New York State law.
- *Environmental Laboratory Approval Program*. Certify laboratories performing environmental analyses on samples originating in New York State.
- *Laboratory Investigations Unit*. Review allegations of laboratory impropriety that might result in administrative, civil, or criminal prosecution.
- *Regulated Medical Waste Program*. Oversight of the handling and treatment of regulated medical waste and manufacturers of alternative systems used to treat medical waste.
- *Animal Welfare Program*. Oversight of animal facilities that use living animals for research and education.

CROSS-DIVISIONAL FUNCTIONS AND ACTIVITIES

Research

The Wadsworth Center has been especially noted for its strengths in basic and applied biomedical and environmental research. The prevailing philosophy of the Center is that a strong research program is essential to maintaining contemporary approaches to the prevention, diagnosis, and treatment of diseases as well as to detecting and remediating environmental hazards of public health concern.

Efforts of Wadsworth Center scientific staff provide the basis for external funding and technology transfer and have resulted in more than 1,000 scientific publications over the last five years. In calendar year 2017, 54 Wadsworth Principal Investigators received 201 awards totaling $36 Million in external funding. Wadsworth Center scientists use cutting-edge technologies to study topics in environmental and biological sciences related to human health and disease. Investigations fall into four broad areas:

Genes and Genomes

- Wadsworth Center investigators explore the human genome for clues to how genes orchestrate the development and function of the healthy person and how mutations in the genetic code can lead to disease. They study how the interplay of genes, non-coding genetic sequences, and the environment contributes to individual and public health.

Molecular and Cellular Basis of Disease

- Wadsworth Center investigators explore how cells communicate with one another, regulate growth and proliferate, age or die, and the origins of cancer cells and the mechanisms by which cancer cells evade chemotherapy. They investigate the structure and function of bio-

molecular machines using advanced technologies such as 3D-cryo-electron microscopy, x-ray crystallography, and nuclear magnetic resonance spectroscopy. In neuroscience, Wadsworth scientists study new approaches on how to restore function after an injury, including the interfacing of brains and computers.

Infectious Diseases and Host Defense

- Wadsworth scientists seek to improve the detection of disease-causing organisms and understand their fundamental properties. They develop more effective assays to identify pathogens in order to monitor and manage disease outbreaks. They use a combination of traditional and modern molecular technologies to rapidly determine the source of disease transmission. Researchers study the life cycles of microbes to understand how they infect and interact with their human host, and they explore the defense mechanisms mounted by the host immune system.

Environmental Health Sciences

- Scientific and technological advances allow for the detection of minute quantities of contaminants in complex environmental, biological and clinical samples. Wadsworth scientists employ these and other approaches to monitor the environment for public health threats, assess individual exposures, and investigate the relationships between environmental, occupational and dietary exposures and health effects. Their studies also examine the underlying interactions of environmental toxins with immune, endocrine, neurological and genetic systems.

Education and Training

The Wadsworth Center contributes to the training of the public health laboratory workforce of the future through its involvement with numerous educational programs. These include training and mentoring of students in the Wadsworth Center's Master of Science in Laboratory Science Program. Students receive practical public health laboratory training complemented by the study of laboratory regulations, quality assurance, financial operations, and human resource management.

The Wadsworth Center also trains doctoral and master's students in the Departments of Biomedical Sciences and Environmental Health Sciences in the School of Public Health, University at Albany. While these are University at Albany academic departments, many of the laboratories that make up each Department are located in the Wadsworth Center. Some students in the Master of Public Health program in the School of Public Health also receive training at the Wadsworth Center. Overall, there are ~40 graduate students receiving their training at the Wadsworth Center at any given time.

The Wadsworth Center also manages a training program for ~60 postdoctoral fellows. In addition, a variety of internships and summer experience programs are made possible for college undergraduates through funding, in part, from the Association of Public Health Laboratories and the National Science Foundation.

3 BUILDING SUMMARY

INTRODUCTION AND OVERVIEW

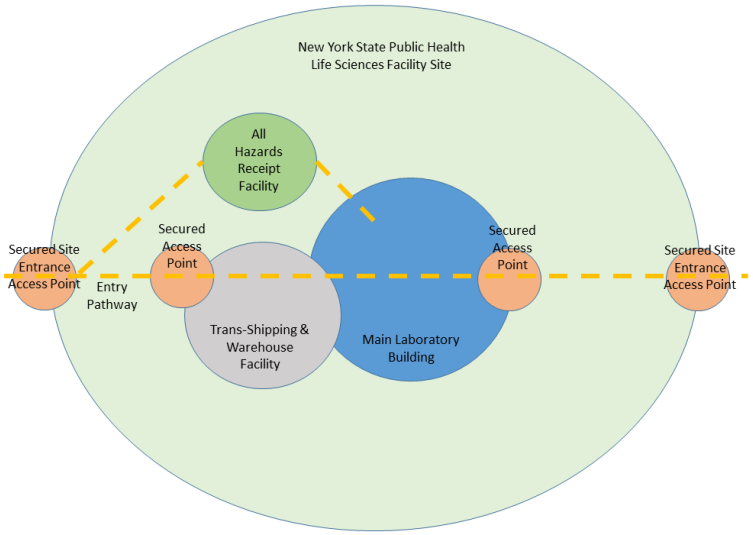
This section of the BOD describes the basic characteristics of general building elements, adjacencies and workflows, as well as provides general spatial descriptions of administrative, conferencing, vivarium, and laboratory spaces for the New York State Public Health Life Sciences Complex. This section is intended to establish the initial parameters that will guide the selected design team towards a better understanding of the specific needs of the primary buildings of the new laboratory. This is not intended to be an exhaustive document detailing the design of every aspect of each laboratory space. It is the intent that the selected design team will take the information gathered within this document and expand upon that information and ultimately propose tailored solutions for each scientific program and associated supporting service spaces. This document was put together with input from the current Wadsworth Laboratory team but only captures a small portion of the detail required for development of a full design proposal. Extensive workshops, user interviews, and data gathering by the design-build team will be expected during the early stages of the process.

THE NEW YORK STATE LIFE SCIENCES PUBLIC HEALTH LABORATORY COMPLEX

Facilities Summary

The New York State Life Sciences Pubic Health Laboratory Complex will be composed of several buildings:

- Main Laboratory Building
- Trans-Shipping and Warehouse Facility
- All Hazards Receipt Facility
- Central Utilities Plant
- Emergency Generator Facility
- Fuel Storage
- Structured Parking Garage/Surface Parking
- Vehicle and Equipment Maintenance Garage
- Security Checkpoint Gatehouses



Main Laboratory Building Overview

The Main Laboratory Building will house the majority of the research and testing programs and be the heart of the complex. It will include BSL-2, BSL-3, ABSL-2, ABSL-3, and ACL-3 biology laboratory types, ISO 5 and ISO 7 clean rooms, and chemistry extraction and instrumentation laboratories. These space types are defined later in this document along with architectural, mechanical, electrical and plumbing design criteria.

Trans-Shipping and Warehouse Facility Overview

The Trans-Shipping and Warehouse Facility will prescreen all inbound material and be the main buffer between the Main Laboratory Building and both materials management and security. This building will be the delivery point for all materials, parts, and specimens to the Main Laboratory Building. The Trans-Shipping and Warehouse Facility will also contain an AAALAC accredited Animal Quarantine area for the delivery and transfer of laboratory animals used within the Vivarium located within the Main Laboratory Building. The Trans-Shipping Building will include a large loading dock area with automated dock levelers accommodating both large tractor trailer type vehicles as well as common box and commercial type trucks. This facility will be the central collection point for all building waste prior to final off-site hauling. This facility will also contain an area for long-term materials storage, including a freezer farm with requirements for secured storage for some programs. Hazardous material load should be reviewed to determine the best way to isolate and house clean/dirty products given applicable building codes.

All Hazards Receipt Facility Overview

Samples of unknown and potentially hazardous substances will be screened in this facility prior to laboratory analysis. This pre-screening facility protects the main laboratory facility and staff and will comply with the US Department of Homeland Security and the US Environmental Protection Agency's "All Hazards Receipt Facility Screening Protocol" Document dated September 2008 (Document number DHS/S&T-PUB-08-0001 & EPA/600/R-08/I05).

Central Utilities Plant Overview

A Central Utilities Plant (CUP) is a 24/7 operation that will service the Main Laboratory Building as well as other facilities within the complex as defined in Section 5 (Systems Performance Criteria). It is preferable to have the CUP located in close proximity to, or within, the Main Laboratory Building. Engineering staff running the CUP will also be responsible for all the building MEP systems. Where demand does not warrant connection to Central Plant Utilities, local stand-alone mechanical systems will be necessary. See facility descriptions in the sections that follow for further information. The CUP will include a separate secondary standalone UPS and emergency power generator and distribution system to critical systems. Connections to the other facilities shall be run as underground services as required. These will include at a minimum:

- Chilled Water
- Steam
- Primary Electrical Power
- Domestic Cold Water
- Sanitary Sewer
- Fire Suppression Water Loop
- Telecommunications, Radio, PA
- Security & Live Safety Systems
- Information Technology Data Cables
- VOIP & Point Monitoring
- Building Management System

Ancillary Facilities

Emergency Generator Facility Overview

Emergency generators will be provided to support the New York State Life Sciences Public Health Laboratory complex. Approximately 75% of the complex will be supplied with emergency power. The generators shall be centrally located within an enclosed structure protected from outside weather conditions and will provide emergency power to the entire site as defined in the Operational Status levels within the detailed Program List of Spaces in Section 3, Building Summary. Ideally, the generators will be located within close proximity to the CUP. The exhaust from the generators shall be positioned so re-entrainment of fumes will not enter any of the buildings' supply air streams. A wind dispersion or wind-and-wake analysis shall be performed, as defined in mechanical narratives in Section 5. The Main Laboratory Building will require localized, large UPS coverage to protect lab equipment and IT assets.

Fuel Storage Overview

Underground fuel storage with capacity for 3 days of full generator operations will be provided. The resupplying of fuel to the storage tanks shall be located as remote as possible from the Main Laboratory Building and other occupied spaces. The location of the storage tanks shall comply with the security and threat risk analysis guidelines provided in Section 6 and any applicable environmental requirements. Consideration should also be given for co-locating refueling stations for campus fleet vehicles such as maintenance and other related transportation. During the design phases, the selected design team should analyze the current strategies for these types and quantities of vehicles and provide necessary supporting infrastructure.

Vehicle and Equipment Maintenance Garage Overview

The Vehicle and Equipment Maintenance Garage should consist of contiguous bays to house the equipment and vehicle fleet. The Garage will be used to store and maintain the lawnmower, skid steer loader, utility truck, campus carts, and snow removal equipment.

Security Checkpoint Gatehouses Overview

The security checkpoints for the campus will be the primary means of monitoring the entire site and securing traffic flow into and out of the site. These facilities will be manned full time and have communication and network connectivity to the Security Command Center located within the Main Laboratory Building. The security checkpoint buildings will be approximately 1,000 GSF each and will include all services, including HVAC, plumbing and electrical, as well as having a restroom, lockers, and refrigerator/microwave kitchenette. These security checkpoints will have direct connection to IT, security and telecom networks as necessary to communicate with and monitor the site and all buildings located within the complex. Access to fire command monitoring for each building will also be located within these checkpoint buildings. It is anticipated that there will be a minimum of 2 gatehouses, one at the main entrance and one at the service entrance. The main entrance gatehouse should include an associated parking zone as well as reception vestibule for in-processing nonemployees. The square footage of these buildings is part of the overall gross square footage as calculated within the overall program.

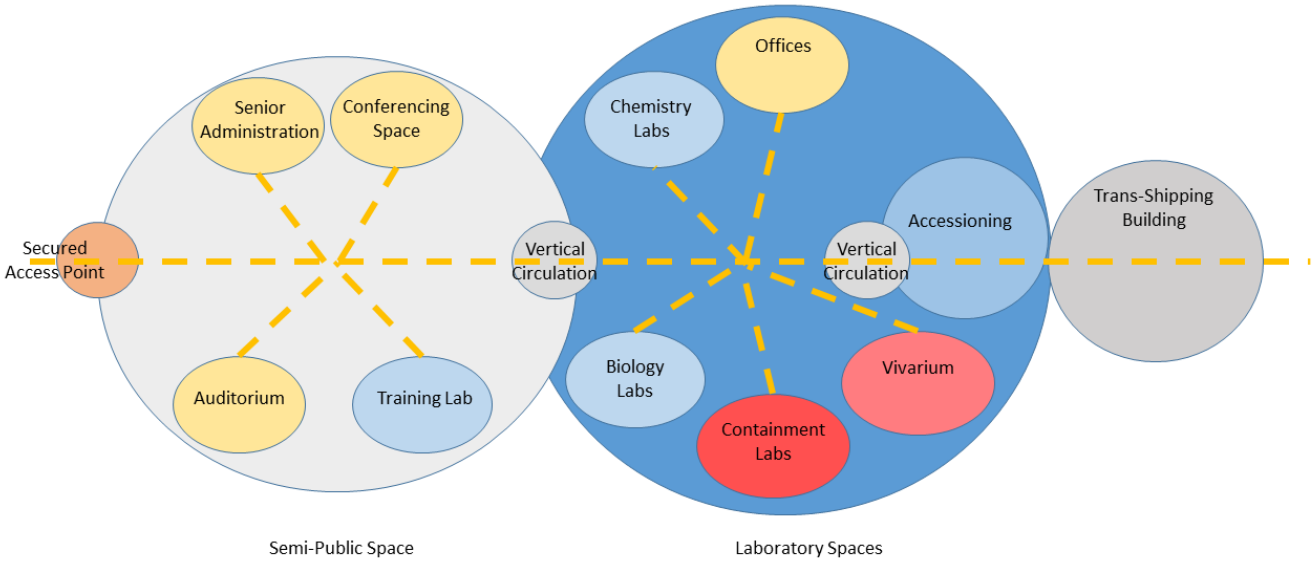
BUILDING SUMMARIES

This section of the BOD summarizes the details for the two primary buildings that will encompass the laboratory functions of The New York State Public Health Life Sciences Complex: The Life Sciences Public Health Laboratory Main Laboratory Building and The Trans-Shipping and Warehouse Facility. Each of the buildings will be discussed in turn.

THE MAIN LABORATORY BUILDING

The Main Laboratory Building will be the cornerstone and public face of the New York State Life Sciences Public Health Laboratory complex. This laboratory building will be the nucleus of the complex and will house the majority of the laboratory-based testing, research and support programs as well as space for offices, administrative functions, and amenities. It will consolidate activities currently conducted across five locations, streamlining laboratory functions by maximizing the sharing of resources and providing a working environment that allows for collaboration, exploration and problem solving.

The overall organization of the Main Laboratory Building is illustrated graphically below. The building will have two main access points. Employees and the public will enter the building primarily through the main entrance. Specimens, supplies and permitted personnel will enter the building via the connection with the Trans-Shipping and Warehouse Building.



Typical Building Elements

Security. Security will be addressed campus-wide, and a consultant should be engaged to analyze the threats and risks that are specific to LRN public health facilities that contain biocontainment laboratories. Security will be of primary concern and be comprised of multiple levels in a layered type approach. The deeper within the

building one goes the more levels of secured access will be required. Other than the main entry lobby to any of the buildings within the campus, there will be no general access. The site itself will be secured and only badged and/or cleared people will be allowed access beyond the site level security.

All entry points to the building will be secured either by manned security or card key access. All doors from the outside will require intrusion detection and alarms that tie back to the Central Security Command Center. Upon approach to the main entrance, a man-trap type entry utilizing two sets of doors will have the ability to be interlocked by security in the event a threat is identified. Security within the lobby of the building will have full visual connection from the interior of the building's lobby to the immediate surroundings outside the building. Cameras will provide full visual connection to the remainder of the site, primarily from the command center, but accessible by security at any location within the New York State Life Sciences Public Health Laboratory Complex. Upon entering the lobby, the security desk will provide necessary credentials and notification of the proper escort to gain access to the interior of the building. Both employees and visitors entering the building must pass thru security.

Semi-Public Spaces. Spaces frequented by visitors will be located adjacent to the main lobby. These spaces will include the auditorium, conference rooms, cafeteria, senior administrative offices and associated administrative staff, the library, and the training laboratories. Although these are listed as semi-public spaces, there will still be a level of security screening prior to accessing these spaces. There is no general access areas beyond the main entry lobby.

Access to Laboratory Space. Access to laboratory spaces within the Main Building will be card key controlled in addition to initial security screening upon entry to the building. The laboratories will be accessed via secure doors or personnel elevators when entering from the main lobby, or via the freight elevators that will be located near the connection with the Trans-Shipping and Warehouse Facility.

Service Corridors. Lab services should be kept out of the laboratories as much as possible and organized in a way that facilitates easy maintenance access, such as placement in dedicated service corridors, although other configurations for provisioning of services should be evaluated. Space must also be provided for high-purity gas cylinders with appropriately placed manifolds. Manifolds should tie back to the building automation system and be supplied with standby power. The corridor finishes will be sealed concrete, vinyl base, wall protection board and epoxy paint.

Lab Gas Utilities Systems. Compressed air and vacuum will be distributed from a central system. Nitrogen, carbon dioxide and all other specialty or high purity gases will be provided in cylinders either manifolded above and piped from the service corridor or with cylinders located at the point of use within the laboratory. All cylinders will be restrained as required per code. All distribution piping should be accessible from corridors outside the laboratory spaces. This distribution piping will be run in walls to outlets and above ceilings to utilities service panels or overhead service carriers. Piping shall not be exposed to view. Cylinder gases in the ABSL-2 and ABSL -3 vivarium and BSL-3 laboratories will be distributed from services areas outside of the containment barrier. The plumbing laboratory outlet fixtures will be polished stainless steel with a clear epoxy coating unless otherwise noted.

Signage

Site Signage. The New York State Life Sciences Public Health Laboratory will be a campus setting comprised

of multiple buildings. Although the majority of outside traffic will be maintained outside a secured perimeter, campus-wide wayfinding will be vital. Directional signage will be required for both vehicles and pedestrians throughout the campus.

Facilities Signage. Each facility within the complex will be required to have wayfinding signage. Numbering and naming all rooms with appropriate naming conventions, compliant with state requirements as well as coordination with New York State Life Sciences Public Health Laboratory personnel will be required.

Laboratory Signage. An appropriate signage system will be posted at each lab entrance and within the vivarium indicating the room number and name, if appropriate, and providing flexible options for posting additional information such as names, emergency contact information, hazard warning symbols, etc., for each room. Signage shall follow ANSI A117.1 and applicable ADA requirements, as well as all New York State Public Health Life Sciences Facility codes, regulations, guidelines and requirements.

Safety Stations. Safety showers and eyewashes will be located per the ANSI requirement; this will be coordinated with the laboratory users. These units will meet ADA requirements and be served with tepid water with the mixing valves placed in an accessible location for future service. A safety station consisting of a deluge shower and eye/facewash should be placed within 10 seconds travel distance from areas using chemicals. An eyewash station will be located in each lab. Lab safety emergency response stations will be located in each lab corridor 200 feet on center on each level. A lab safety emergency responses station will consist of a safety shower, eye wash, fire blanket and a space (30”x30”) for an emergency response cart. A telephone will be located within each laboratory to summon emergency assistance. Fire extinguishers will be distributed within the building per code requirements. Safety features should be fully accessible to each laboratory and meet OHSA and ANSI requirements.

ADJACENCIES/WORK FLOWS

This section describes adjacencies and work flows that should be considered during building design in order to create purpose-driven spaces that maximize safe, efficient work performance.

Centralized Support Services

Accessioning. Accessioning space is of central importance for the environmental and clinical testing programs. All incoming specimens and samples are received from the Trans-Shipping and Warehouse Facility, accessioned in the main accessioning space, and then distributed to the appropriate laboratories for analysis. Accessioning will be centrally located on the ground floor of the Main Laboratory Building, close to the Trans-Shipping and Warehouse Facility where specimens will be initially received. Accessioning space should be designed to facilitate the rapid and efficient movement of large numbers of samples from receiving, through accessioning, to laboratory programs located throughout the building. Separation of clinical, environmental, and research samples will be required. Facilities for refrigerated and freezer storage will be required in the accessioning area. Many specimens will also require secure, chain-of-custody handling and storage. Design of the accessioning space should also accommodate the large volume of waste material that is generated that needs to be discarded or stored for recycling.

Glassware. The centralized glassware facility will support the cleaning and sterilization of glassware for the laboratory. An array of glassware washers, sterilization baking ovens, and autoclaves should be planned for the space along with space to wrap and store clean glassware before distribution to the laboratories. The glassware facility should be centrally located to facilitate easy movement of large volumes of glassware to and from the glassware facility and the laboratories.

Waste and Recycling. There will be multiple waste streams within the New York State Life Sciences Public Health Main Laboratory Building, including but not limited to:

- Domestic general and recyclable waste
- Biological waste
- Chemical waste
- Radiological waste
- Animal/Necropsy waste
- Hazardous waste
- Controlled Substances waste

Centralized, controlled access areas for the storage of biological and chemical waste will be provided on each floor and/or wing of the building. Where required by programmatic needs, there will also be radiological waste storage areas provided. These storage areas are intended to be used for temporary holding prior to being carried to the Trans-Shipping and Warehouse Facility from where it will ultimately be hauled away. Space shall also be provided for red-bag and regulated medical waste holding prior to pick up by an outside hauler. As part of meeting the LEED Prerequisite 1 for Materials and Resources, there will be easily accessible areas on each floor of the building dedicated to the collection and storage of materials for recycling, including, at a minimum, paper, corrugated cardboard, glass, plastics and metals.

Schedules for pick up and waste capacity will be a programmatic development. This information will inform the decision on quantities and types of storage areas and dumpsters required to support the facility. As part of the overall complex's approach to waste and material handling, the Trans-Shipping and Warehouse Facility will house the centralized point for waste collection and holding prior to removal by an outside hauler.

Information Technology. IT plays a central role in all activities the laboratory. As such, the IT infrastructure for the Main Laboratory Building will be extensive. All space, including laboratory, office, and conference space, will have ready and abundant access to data ports. The IT infrastructure will be supported by a state-of-the-art central server room designed to maximize reliable, stable IT support, and by numerous smaller telecom closets located throughout the building. All server rooms and IT closets will be secure. Overall design of the IT infrastructure should put a premium on easy access to hardware to facilitate adaptability for future needs and growth as well as for maintenance, repairs, and upgrades. Clinical and testing programs will require local UPS backup for critical activities. Consultation with New York State's Information Technology Systems and Department of Health will be necessary as the building design progresses.

Scientific Cores

The services and products provided by the scientific cores are available to all laboratory programs. All spaces constituting an individual core should be located together, but the different core services, as a whole, do not need to be adjacent. In terms of specialized space needs, the electron microscopy core will be part of the electron microscopy suite and will require the requisite engineering as discussed below for specialized types of

BSL-2 labs.

ADJACENCIES/WORK FLOWS BY SCIENTIFIC DIVISION

The specialized activities performed within each of the different Scientific Divisions will be best facilitated by having all the laboratories within each Division, both testing and research, broadly co-located within the laboratory building. Proximity is particularly important to maximize supportive interactions between the research and testing laboratories. That being said, the unique work flows and/or engineering requirements for some laboratories will likely drive decisions about where that laboratory would be best located with respect to both the overall building design and more proximal laboratory adjacencies. Issues related to optimal laboratory adjacencies and more specialized requirements for laboratory positioning within each Division are discussed below.

Division of Environmental Health Sciences

Laboratories in the Division of Environmental Health Sciences (DEHS) are highly interactive, and adjacency of the chemistry labs within the Division is important for the overall work flow common to this Division. Environmental samples accessioned in the accessioning laboratory will be distributed to many of the laboratories in DEHS for analytical testing.

DEHS space, in general, will be extraction and analytical chemistry labs with high fume hood densities and high electrical and heat load requirements due to a larger number of mass spectrometers, as detailed below and in the Program Spaces spreadsheet. Many DEHS laboratories will have high security requirements. The Trace Elements Laboratory will require engineering for ISO 5 and ISO 7 clean rooms, and the Nuclear Chemistry lab will require reinforced flooring support to accommodate the high weight loads of lead-shielded radiation detectors. The Environmental Biology Program in DEHS consists of BSL-2 microbiology laboratories rather than chemistry laboratories and would benefit most from being located closer to the Bacteriology Laboratories in the Division of Infectious Diseases than to chemistry laboratories in DEHS.

Division of Genetics

Laboratories in the Division of Genetics (DOG) are broadly divided into research laboratories and the Newborn Screening program (NBS). The individual genetics research laboratories are independent but highly interactive and are well suited to an open BSL-2 laboratory design with extensive sharing of space and instrumentation between the different laboratories. Newborn Screening is a large clinical testing program that will make use of a similar accessioning - testing lab work flow common in the Divisions of Environmental Health Sciences and Infectious Diseases. NBS will include BSL-2 labs and PCR suites with positive air pressure clean reagent rooms with associated ante rooms. The NBS program is relatively self-contained and adjacency to other laboratories within DOG is less central to their work flow. Some of the laboratories in NBS have a large (and growing) number of mass spectrometers and will therefore require the requisite electrical and heat load engineering modifications to their BSL-2 laboratories.

Division of Infectious Diseases

Laboratories in the Division of Infectious Diseases (DID) are highly interactive, and adjacency of all labs within the Division is important for the overall work flow common to this Division. Clinical specimens accessioned in the accessioning laboratory will be distributed to many of the laboratories in DID for testing.

Laboratories within DID will include standard BSL-2 labs, PCR suites with positive air pressure clean reagent rooms with associated ante rooms, and BSL-3 labs. Design of the BSL-3 spaces will need to consider both the engineering and work flow efficiencies that come from clustering BSL-3 laboratories. For individual programs that have multiple BSL-3 suites, they will be either in a common cluster or be physically adjacent. To the extent possible, the BSL-3 lab(s) for any given program should be as close to that same program's BSL-2 laboratory as possible. Careful consideration should be given to how best to locate the non-BSL-3 support spaces for each BSL-3 suite and cluster. Ease of access to facilitate repair and maintenance activities outside of containment should be a priority.

The unique characteristics of the Rabies testing program requires that the Rabies Program, which consists of primarily BSL-3 space, be located on the ground floor of the Main Laboratory Building separated from other program spaces.

Division of Translational Medicine

Laboratories in the Division of Translational Medicine (DTM) are broadly divided into basic research laboratories and the Neural Injury and Repair program (NIR). The research laboratories are independent, but interactive and suited to a standard BSL-2 open laboratory design with sharing of space and instrumentation between the different laboratories. Space for the larger TEM microscope will be shared with other programs within the electron microscopy suite.

The NIR program is a clinical program that requires uniquely modified BSL-2 laboratories for working with human subjects, as discussed below under BSL-2 lab types. The laboratories within NIR should be co-located but do not need to be adjacent to the other laboratories in DTM.

Division of Laboratory Quality Certification

The Division of Laboratory Quality Certification (DLQC) is a non-laboratory, regulatory Division that requires only office space to perform their functions. They will also require dedicated conference rooms within their space.

MAINTENANCE, OPERATIONS, AND ENGINEERING FACILITIES

The Maintenance, Operations and Engineering activities of the New York State Life Sciences Public Health Laboratory will provide 24/7 support, repairs, and upgrades to all aspects of the infrastructure and equipment of the Laboratory.

Maintenance Facilities

The Maintenance Facilities will include plumbing, electrical, paint, carpentry, machine, and instrumentation repair shops. Each of these groups need access to similar equipment, tools, material, spare parts, and services. Groups can share shops space but would require separate touch down workstations for detailed tasks. Access to IT is required in touch down spaces. Careful consideration should be given to the adjacencies required. Equipment size, access, routing and serviceability should be carefully studied so that the supporting areas for the building maintenance services be accessible and efficient. Equipment that the maintenance group may

utilize include items such as drill presses, lathes, milling and grinding equipment, painting booths, carpentry and electronics testing equipment. The maintenance shops will produce noise and vibrations that will need to be considered with respect to adjacencies of spaces sensitive to such disturbances, such as the vivarium, imaging labs, and clinical patient study areas. There will be some chemical storage and use within the maintenance area, including paint, cleaners and lubricants. There will also be the need to store frequently used project materials such as pipe and fittings, wire and electrical components, sheet metal, and personal protective equipment for the staff. Separation from other adjacent areas will be required to meet local and international building codes. Considerations should be made for a bulk material storage location near the facility. Raw materials will likely be stored within the Trans-Shipping and Warehouse Facility and be brought to the maintenance area within the Main Laboratory Building when needed. Consideration should be given to the flow of large raw materials from the warehouse to the maintenance area.

Operations Facilities

The Operations Facilities zone will serve as the primary point-of-contact for in-house and contract staff on all facilities-related matters and act as the "Facilities Help Desk" for the building occupants. The area will be comprised of supervisory office spaces, which will require adjacency to conference space, huddle rooms, and a kitchenette. Operations Facilities space will need to house building drawings and specifications storage and review areas, building and maintenance management systems workstations, administrative/support space, contract labor touch down space, and large-format and general scanning/drawing copier/printer space. Design of these Operations Facilities spaces should be coordinated with the general design approach used for Administration, Office and Amenities spaces. The office, conference, and huddle rooms should be designed for privacy, while all other spaces should be more open layout in concept. The space should also include standalone BMS and CMS system access stations as well as other facility software and monitoring needs. Consideration should be given to a central location for the Operations Facilities space to facilitate the high traffic use the space will receive on a daily basis.

The Operations unit will also provide grounds oversight and vehicle fleet management. A need will exist for covered garage space for vehicle and grounds equipment storage (trucks, snow removal equipment, mowers, etc.). The need for contract staff to leave large snow removal equipment on sight may also be necessary.

Custodial service zones will be distributed throughout the facility. Each zone will include space to store frequently used janitorial materials and supplies, a domestic hot/cold water source, and a slop sink. In addition, there will be a requirement for larger, centralized space for bulk storage of janitorial supplies along with dedicated custodial equipment such as floor cleaning and stripping equipment, ladders, custodial carts, gondolas, vacuums, etc..

Engineering Facilities

The Engineering Facilities should be directly adjacent to the Central Utilities Plant (CUP). The CUP will include the equipment control room, separate male and female restroom/locker/shower areas, break room, food vending space, and kitchenette. These spaces will be staffed and operated on a 24/7 basis. The CUP, as well as all mechanical spaces within the building, will be secure space. The equipment control room should be set up to operate all the buildings utility management systems (BMS, chillers, and boiler controls, life safety systems, equipment point monitoring, etc.) from a central workstation. The building and equipment management systems should be served by a dedicated UPS unit. In addition, the CUP requires an emergency power generator over and above the building generator system. Space should also be allocated for storage of

materials and supplies needed quickly in the event of a facilities emergency. To provide effective oversight, the CUP should have adjacency to the building generators as well as to the locations of normal and emergency fuel storage.

Build-out and extra stock material generated by construction of the Laboratory will require significant storage space located either within or near the building. The storage space must be code compliant and clearly identified.

The New York State Life Sciences Public Health Laboratory is expected to serve the public health needs of the State of New York for the next 50 years. This Laboratory must therefore be a sustainably designed complex. There needs to be careful consideration during building design to the placement of utilities, support services, and support equipment, so they can be easily accessed for routine maintenance, repair, and replacement without disruption to critical testing and research activities taking place within laboratory spaces. This will be a diverse and complex laboratory, so proven sustainable plant design will be essential for providing flexibility and longevity.

ADMINISTRATIVE, OFFICE AND AMENITIES DESIGN

Office Spaces

Consideration should be given to maintain a consistent approach to designating office layouts, types and sizes throughout the project. Office sizes and quantities are provided in the Program Spaces spreadsheet at the end of this section. Each type of office workstation will have ample electrical, tele-communication and network connections, a sit down/stand up desk, and secure wardrobe storage. Below is a brief description of the characteristics of each type of space. Refer to the Electrical, Communications and Infrastructure narratives within Section 5 for further details.

Office Types A & B. These office types are intended to be configured as enclosed office areas. The types differ in size and furniture capacity. Office Type A is 242 ft^2 (sf), and Office Type B is 121 sf. All enclosed offices will be designed to provide as much flexibility as possible with the configuration of furniture. The design intent of all private offices is to provide maximum view to the exterior with maximum natural light filtering into the spaces. The use of glass partitions to enclose offices is encouraged to allow a large amount of daylight harvesting into the space and for views through the offices to the exterior. Maximum ceiling heights should be provided within all spaces with a minimum height of 10 ft. Ceilings should be highly reflective acoustical ceiling tile.

Office Type A should contain the following: a desk with worksurface, return and credenza shell, file cabinets, overhead storage, wardrobe with hinged door, open bookcase with shelves, tack board, task light, and a small work table with 4 work table chairs. A task chair and two office guest chairs should also be included. Office Type B should contain the following: a desk with worksurface, return and credenza shell, file cabinets, overhead storage, wardrobe with hinged door open, bookcase with shelves, tack board, task light, a task chair, and two office guest chairs.

Cubicle Types A, B and C. These office types are intended to be arranged in an open workspace area. The types differ in size and furniture configuration. Cubicle Types A, B and C are 121, 90 and 60 sf, respectively. All open office workspace areas will be designed to be as flexible as possible with the configuration of system

furniture, general lighting, HVAC, and IT connectivity within the space. The design intent of all open office areas is to provide maximum view to exterior with maximum natural light filtering into the spaces. The use of high furniture system partitions is discouraged since they take away from this design concept and reduce the amount of available daylight in the space. Maximum ceiling heights should be provided within all spaces with a minimum height of 10 ft. Ceilings should be highly absorbent acoustical ceiling tile. All cubicle types should have electrical, data and telephone connections.

Cubicle Type A should contain the following: cantilevered and pedestal work surfaces along two sides with an adjustable work surface on the third, task lighting and overhead storage. Wall panels should surround each cubical. Cubicle Type B should be equipped comparable to Cubicle Type A except at sizes that fit in 90 sf. Cubicle Type C should be arranged in a back-to-back systems furniture configuration with a 2-sided work surface, one cantilevered and one adjustable, overhead storage area, task lighting and a task chair.

Although low wall partitions and provisions for an open office environment are preferred, it should be considered during design that some cubicles will need a certain level of privacy. Mitigating measures to address direct line of site and acoustics should be implemented. Ergonomics is a vital part of a sustainable and comfortable work environment and proper ergonomic design should be a primary consideration in every aspect of the design. Strictly for estimating purposes, it was established that 50% of office work stations will be adjustable with the capability to be a sit or stand configurations. The design phases should take into consideration the multiple industry options to best suit the project.

Hotdesk Workstations. These workstations consist of a single desk assigned to a specific individual (technicians, postdocs, students, etc). Hotdesks should be arranged in clusters in an open workspace area, a larger common room, or secure rooms (as appropriate) to facilitate interactions between the individuals within a cluster, which will commonly include workers within the same laboratory program. Each hotdesk should have electrical, data and telephone connections. A designed solution is required to address securing of personal belongings. The design team should consider alternate ideas other than key locking drawings and cabinets. The solution should be sensitive to the challenges of conventional key management and propose a solution that is simple yet effective.

Hoteling Workstations. These are workstations consisting of a single desk that is assigned to an individual but only for a short period of time, perhaps a day to a few months, as would be appropriate for field workers that only occasionally work in the office or for summer students and volunteers. Hoteling workstations should be arranged in clusters either in an open workspace area or a larger common room, and should have electrical, data and telephone connections. They should be located throughout the building. As stated above in the hotdesk criteria, hoteling stations also will have a need for securing personal items. The same simplified solution should be applied to these workstations as well.

Ancillary Office Support Spaces. Identified within the program list of spaces are ancillary spaces that support the functions of primarily the office and administration spaces, but also support the laboratory programs. These spaces include copy and work rooms, kitchen and break areas, file rooms, and locker rooms. Although consolidated within Administration space in the Program Space spreadsheet, these spaces should be spread throughout the facility as needed by various programs. A systematic approach to locating these types of spaces should be consistent across the floors both horizontally as well as vertically within the building. These areas should include network connections to provide connection of equipment to the IT infrastructure. Break rooms should also have the ability to tie in to the IT network infrastructure to facilitate impromptu meetings with the

ability to access files and programs for collaboration and interaction among the scientists and occupants of the facility. File rooms and other storage areas should be a consideration within a more detailed programming dialogue as the design develops. File rooms may take on many different aspects from simple lateral file systems to more centralized, high-density filling systems. Some file and copy rooms will need to be secure for some programs.

Conference Spaces

Collaboration is a key component in any laboratory and research environment. Conferencing spaces play a large role in fostering opportunities for interaction and collaboration. Consideration should be given to maintain a consistent approach to designating conference room layouts, types and sizes throughout the project. Conference rooms will include an auditorium, flex-classrooms, large, medium, and small conference rooms, and collaboration spaces. Quantities are provided in the Program Space spreadsheet. Audio-visual design should be a primary consideration when designing the functionality of each type of conference space. An audio-visual consultant should be engaged to identify proper long-term flexible solutions. The design intent of all conferencing spaces is to provide the highest level of privacy from noise and visibility into rooms. Careful consideration must be taken to provide adequate STC ratings on all partitions and openings into room. Maximum ceiling heights within all spaces should be provided as specified earlier. Higher ceiling would be an advantage, mainly for projection viewing. Conference rooms should be located throughout the building, so they are readily and conveniently available for all users. Note that some conference spaces will double as Command Centers during emergencies and require Operational Status 1 rating. Below is a brief description of the characteristics of each type of conference space.

The selected design team should assess the required storage space, for both quantity and locations, for special events. The New York State Public Health Life Sciences complex will host a wide variety of events that, under normal operations, may require chairs, tables and other miscellaneous items to be stored when not in use. These items shall be standardized and compatible for use and storage across the facility and/or all conference spaces. Storage space for stacking chairs, folding tables etc, will be required to be accommodated in addition to the programmed space as identified in the space program.

Auditorium. The Main Laboratory Building will include a large 150-seat auditorium, containing a high-definition video system with wall and ceiling-mounted speakers, a podium with integrated computer, and should have fully integrated audiovisual conferencing capabilities. The space should also be flexible enough in its design to be adaptable for smaller seminars/meetings involving only 30-40 people without the smaller group becoming 'lost' within the larger auditorium space. Consideration should be given to a movable partition as a means to subdivide the space. Movable wall divider will be expected to have acoustic performance allowing simultaneous events to occur in both spaces. Small kitchen and server areas should be incorporated into the design of the auditorium accessible for configurations when one large space as well as subdivided smaller rooms.

Flex Classrooms. The Flex Classrooms (~30-35 pp) should include an integrated smart board projection system with podium controls as well as glass boards. Each seat position should have electrical and data connections. Flex classroom seating should be considered as movable not fixed.

Large Conference Rooms. Large conference rooms (~25-35 pp) should include a large conference table and chairs and still have enough room around the periphery of the room for additional loose seating. The room should include a high-definition flat panel display with full audiovisual and phone conferencing capabilities, a

projection screen, and a glass board. Floor mounted electrical and data connectivity should be provided at the table.

Medium Conference Rooms. Medium conference rooms (~15-25 pp) should include a medium conference table and chairs and still have enough room around the periphery of the room for additional loose seating. The room should have a projection screen, phone conferencing capabilities, and a marker board. Floor mounted electrical and data connectivity should be provided at the table. Certain medium conference rooms are to be used as emergency command centers. Appropriate accommodations shall be considered in the design to facilitate their use during emergency events. This might include, but not limited to, additional power, emergency power, lighting, communications, security monitoring, and networking capabilities.

Small Conference Rooms. Small conference rooms (~8-15 pp) should include a small conference table and chairs while still allowing ample room around the periphery of the room for additional loose seating. The room should include a projection screen and glass board and have phone conferencing capabilities. Floor mounted electrical and data connectivity should be provided at the table.

Collaboration Spaces. In addition to designated conference rooms, less formal, spontaneous interaction spaces should be incorporated into the building design to facilitate spontaneous interactions.

Laboratory Types

The clinical and environmental testing programs and research activities that will take place within the Main Laboratory Building necessitates a wide variety of specialized biological and chemistry laboratory types. In this section, expectations for the laboratory design specifications for the different types of laboratories are provided. Ideal lab adjacencies as relate to optimizing the functions of the various scientific Divisions.

Biological Laboratory

The clinical, environmental and research activities that will take place within the Main Laboratory Building will require BSL-2, BSL-3, ABSL-2, ABSL-3, and ACL-3 types of biological laboratories. These laboratories will be designed to appropriate specifications as described by all relevant oversight agencies, including but not limited to: the current BMBL, and the USDA Agricultural Research Service Facilities Standards 242.1/ Section 9. ABSL-2 and ABLS-3 spaces will be designed to AALAC Accreditation standards, and the ACL-3 spaces will be designed to meet the most current Arthropod Containment Guidelines developed by the American Committee of Medical Entomology (ACME) of the American Society of Tropical Medicine and Hygiene.

BSL-2 laboratory. At a minimum, all biological laboratories will be designed and operated at BSL-2 laboratory standards as per BMBL specifications. Most of the laboratories within the Divisions of Genetics, Infectious Diseases and Translational Medicine will be BSL-2 space. A typical BSL-2 laboratory will be modular in design and allow maximal flexibility for modifications to accommodate dynamic space needs as programs evolve over time. This flexibility should include, but not be limited to, adjustable bench and shelving height, easy bench removal or addition to accommodate large equipment. A sink and fume hood should be provided for every ~500-1000 sf of lab space, although the density of fume hoods will vary widely among different programs. House vacuum and air will be provided, but not natural gas. Ready access to RO water will be provided but does not need to be at every sink. There will not be a building-wide RO system. 120 and 220 V electrical receptacles and data ports should be available at each laboratory bench and equipment area. 50% of the electrical outlets should be on emergency power.

The typical laboratory finishes will be welded or seamless sheet flooring, latex wall paint and acoustical tile ceilings unless otherwise noted in the lab specific types below. The casework will be adjustable height modular tables with shelves and under counter cabinets. Countertops shall be 30’ deep flat, epoxy resin. Electrical, data and piped services will be in overhead ceiling panels, a utility chase or service carriers at six foot on center, as noted in the typical module. Where the module ends with a wall, the utilities can be wall mounted at 44” above the countertop. Service panels will have flexible drops to the modular table countertop and a valve outlet mounted at the countertop. The tables and all casework will be painted steel unless otherwise noted. The countertops and sinks will be epoxy resin unless otherwise noted. All sinks shall have a glassware drying rack above, and a paper towel dispenser located nearby.

The standard BSL-2 lab type will be modified in a variety of ways to accommodate specific work flows, experimental protocols, or instrument requirements. The most common of these modifications are discussed here.

Positive pressure BSL-2 clean reagent lab with anteroom. Numerous BSL-2 laboratories, particularly in the Division of Infectious Diseases, will be part of PCR 'suites'. Each suite will include a clean reagent lab with positive air pressure connected to an anteroom. The anteroom provides a negative air control sink for the positive air pressure clean reagent room as well as a place for PPE donning and doffing. Along with each positive pressure clean reagent room, will be the need for multiple separate PCR and sequencing 'dirty' labs where PCR amplification, library construction, post PCR analysis, sequencing, etc., will be done. The “dirty” labs should be physically separated from the clean reagent lab and specimen processing area. This work will take place in a lab that will have normal negative air pressure relative to the hallway.

Human clinical research. Some laboratories that do human mobility and brain-computer interface research in the Division of Translational Medicine will require BSL-2 labs with a number of special requirements, including 1) large open space with few or no benching, 2) no fume hoods or BSC (although connections for fume hood and BSC should be included in the room design), 3) recessed flooring to allow flush mounting of treadmills, 3) two-room suites (a control room and testing room), and engineering or placement of the labs to mitigation EM and RF interference.

Electron Microscopy. There will be an electron microscopy suite with a large anteroom for shared equipment that supports separate microscopy rooms. Off the anteroom will be four rooms, one for each microscope (JEOL JEM-1400; Zeiss Neon 40 EsB Dual Beam SEM/FIB; Thermo Scientific Glacios Cryo-TEM; Hitachi H-7000). The suite will be designed as appropriate to mitigate ambient/acoustic vibration, EM/RF interference, and atmospheric fluctuations, especially humidity levels. The laboratories will be designed to meet the specific requirements of each instrument. EMI and RFI requirements, structural, vibration, mechanical, acoustical, and electrical requirements shall be confirmed as the building design progresses. Refer to Section 5 under the structural section for vibration limitations. Selected design team shall engage a consultant who specializes in vibration, EMI and RFI analysis specific to the equipment and instrumentation being considered for the new facility. Analysis must be performed on the ambient conditions for the selected site in the general area where vibration and EMI/RFI sensitive equipment is being design for installation. Ongoing analysis will be required as the building design progresses to avoid conflicts between equipment and potential design elements that may produce EMI/RFI interference such as ferrous metal structure and electrical systems above, beside and/or below sensitive equipment areas.

Light Microscopy. There will be a light microscopy suite with a large anteroom for shared equipment that supports separate microscopy labs. Off the anteroom will be multiple labs for various types of light microscopes. The lab containing the confocal microscope will be designed to minimize EM/RF interference and be equipped for point exhaust and 20-amp receptacles. The equipment room housing the vital fluorescence microscope will need to be designed for AAALAC accreditation.

ABSL-2 Vivarium. The ABSL-2 vivarium will be designed and operated based on specifications in the BMBL manual. The vivarium will be an AAALAC accredited facility for housing primarily mice.

The vivarium will function on a clean/dirty corridor concept with one-way traffic. Rooms for food and bedding storage, toilet rooms, lockers, and shower facilities shall be directly accessible to the vivarium. The vivarium will be supported by an animal quarantine facility located in the Trans-Shipping and Warehouse Facility (see below). The dirty corridor for the ABSL-2 containment suites will be immediately adjacent to the dumping station on the dirty side of the main autoclaves to keep the distance that potentially contaminated material needs to travel to a minimum.

The vivarium will operate continuously at operational status 1. The building systems will be designed with N+1 redundancy and fail-safe capacities to maintain interior conditions in the event of power failure or major system failure. There will be an integrated system for monitoring temperature, humidity, and lighting controls in all rooms of the vivarium. All holding and procedure rooms will be designed to be individually decontaminated using vaporized hydrogen peroxide without interrupting work in neighboring rooms. All holding and procedure rooms will be supplied with ample electrical receptacles and data ports. Any animal telemetry system will be by the lab user. The design and construction of the vivarium will incorporate appropriate vermin control procedures to prevent vermin access and harborage inside the building.

No central animal watering system will be required. All waste from the hand wash sinks and the cage wash suite flow to the sanitary sewer. Sinks in any histology procedure room which are not connected to a downdraft or dissection table will flow to the lab waste system. Drainage from downdraft or dissection tables will flow to the sanitary waste system. There are no floor drains in the holding rooms. All waste material exiting the vivarium will be autoclaved.

Flooring within vivarium spaces shall be a high-build troweled-on epoxy coating system. The vivarium construction should consider multiple options that are both cost effective and durable for the anticipated lifespan of the facility. Wall and door systems, such as fiber reinforced plastic as well as gel coated cementitious panel systems should be considered over concrete masonry unit. Doors shall be sized appropriately for the facility equipment being utilized and as discussed with the facility vivarium management during the design process.

Holding rooms will have stainless steel casework and worksurfaces, including counter-mounted sinks and eyewash stations. Ample electrical and data outlets will be provided in all holding and procedure rooms and will be recessed in lieu of surface mounting. There will be three levels of lighting for each room (cleaning, red and preset). Procedure rooms will have stainless steel casework, work surfaces, open shelving, an integral sink and eyewash stations, and able to accommodate BSC installation as needed.

Main and secondary corridors within the ABSL-2 vivarium shall be a minimum of 7’-0” wide. The corridors will be constructed of the same materials as the vivarium. There will be extruded aluminum wall rails the length

of the corridor. Door and wall protection shall be provided at each holding room. Windows to the outside from within the corridors and holding and procedure rooms shall not be permitted.

The cage cleaning suite will be composed of the space needed for dirty cage cleaning and clean cage set up. The dirty cage cleaning area will contain dump stations (and associated waste holding room), large autoclaves, rack washers, and a cage tunnel washer. There will be trenches at the wash equipment, and the water into the suite will be at 180oF. There will be at least two scullery sink stations each 8 feet long. The clean cage prep area will have a bottle filling unit, bedding dispenser unit, an 8' scullery sink workstation and access to storage. Bedding and food will be stored outside of the clean cage room. The autoclaves, pass-through rack washers, and cage tunnel washer will be adequately sized for the scale of operation. Doors to both the dirty and clean sides of the cage washing suite will be double width and open automatically.

BSL-3 laboratory. All BSL-3 laboratory types will be designed and operated based on criteria in the BMBL (BSL-3 and ABSL-3) and the Arthropod Containment Guidelines developed by the ACME (ACL-3). BSL-3 space will be designed based on the principle of "a box within a box". Ideally, these suites will be embedded within the building and not on an exterior wall. The suites will be wrapped in a perimeter circulation corridor to provide a buffer for pressure differentials from spaces adjacent to the containment area. All support devices and equipment need to be installed outside the containment barrier in a service corridor or mechanical space that provides ample room for access by maintenance personnel. These devices include air control devices, control valves, filter boxes, isolation valves and any other item that requires regular inspection and service.

Each BSL-3 cluster will be designed to have a common entry anteroom with shower out capability leading into a common entry space with janitor closet and large equipment decontamination room. Each individual BSL-3 suite (within a cluster or on its own) will have its own anteroom and passthrough autoclave. Each separate room within the containment barrier will be designed to be decontaminated using vaporized hydrogen peroxide without interrupting work in neighboring rooms and/or suites. Ample 120 and 220 V electrical receptacles and data ports will be available at each bench and equipment area in each BSL-3 laboratory, and 50% of the electrical outlets should be on emergency power. The safety shower water and the hot water will not circulate out of the barrier but will have a heat trace tape to maintain the desired temperature. All exhaust for each cluster/suite will be HEPA filtered. The supply and exhausts through the barrier will have gas-tight valves to enable the room to be vapor decontaminated without interrupting work in neighboring rooms.

Chemistry Laboratory

Most programs in the Division of Environmental Health Sciences will require chemistry laboratories designed for sample preparation and for analysis. These laboratories will have a similar overall configuration to the standard BSL-2 laboratory discussed above with some common modifications. Generally, the chemistry prep labs will have a greater number of fume hoods and safe volatile chemical storage capacity, while the analytical chemistry labs will have a greater number of point exhaust ports for heat mitigation and high-amperage (30A), high voltage (220V) receptacles to accommodate a high density of instrumentation, particularly mass spectrometers. Where required by heat and/or fume generating instrumentation, the design team should provide point exhaust devices in lieu of relying solely on room exhaust systems. Some types of mass spectrometers require high rates of venting or large chillers that can contribute to high background noise levels. Some remote siting of these chillers will be required. Mass spectrometers that operate with consumption of large amounts of argon or nitrogen gas will require commercial-size liquid argon or nitrogen dewars and direct plumbing to the labs where those instruments are located. Remote siting of these dewars would also be advantageous. Some instrumentation will be used for critical emergency response operations. High capacity UPS systems will be

needed to support this instrumentation.

The standard chemistry lab type will be modified in a variety of ways to accommodate specific work flows, experimental protocols, or instrument requirements. The most common of these modifications are discussed here.

Clean Rooms. The Trace Elements program in the Division of Environmental Health Sciences will require ISO-7 and ISO-5 clean rooms to reduce background trace elements and other contaminants. Controlling particulates is an important process that the infrastructure of the environment will impact. Surfaces that can collect particulates, such as horizontal ledges, window sills and counters must be kept to a minimum. Use of coved corners at walls, ceilings and floors provide the ability to wipe down areas without potential buildup of particulates. Using laminar flow, low velocity ceiling diffusers with low air returns at the perimeter walls will assure a constant wash of clean air over work areas while pushing the 'dirty' air onto the floor and into the low air returns where the air can recirculate through HEPA or ULPA filtration units located within a plenum space above or adjacent to the clean room area.

Maintenance of the clean room areas will be kept to the outside of the clean area as much as possible. Ceiling mounted lights, diffusers, HEPA/ULPA filters and services shall be accessed from above or adjacent to the classified clean area. The use of panelized modular wall systems is allowed. However, the use of fan- filter housings is not allowed. Air handling equipment and filter banks should be located in the maintenance area directly above the clean space. The laboratory flooring will be a welded seam sheet vinyl with integral cove. The ceiling system will be a nonmetallic grid with clean room quality acoustical tiles. The casework will be polypropylene construction with polypropylene countertops. The plumbing fixtures will be epoxy coated cast or forged red brass. Electrical outlets shall have plastic cover plates. There will be no surface mounted raceways. Only recessed boxes will be allowed in this lab. All fume hoods and cabinets within this suite will be composed of polypropylene and designed as a laminar flow fume hood. There are no perchloric acid fume hoods within the facility. The doors will be FRP fiber reinforced plastic and hardware for the space will be non-metallic.

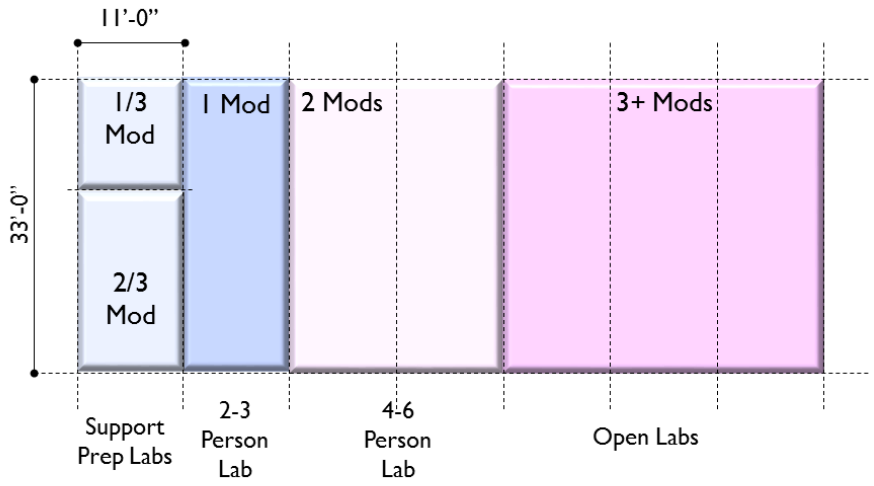
Ideally, the use of a clean room system manufacturer will be employed to construct these spaces. System components are manufactured with strict tolerances and consistency. Typically, walls, windows, doors, ceilings and services such as mechanical, electrical and plumbing can be provided by turn-key manufacturers. Similar to the 'building-within-a-building' concept of containment laboratories, clean rooms are to be considered isolated from the building's enclosure. Clean room construction should be independent other than for structurally suspending components such as ceiling systems.

Nuclear Chemistry. The radioactive measurements laboratories in the Nuclear Chemistry program will have reinforced flooring to support the high weight loads of lead-shielded radiation detectors. The laboratory will also be supplied with lead-lined storage cabinets and stainless countertops. The selected design team must consider the movement of high weight equipment into and out of the building as part of the structural design. Mitigating measures to avoid structural damage during the movement of equipment should be part of ongoing discussions with laboratory personnel as the specific information on equipment specifications are made available. Although the scientific equipment should be shielded appropriately, the selected design team shall engage a radiation consultant as required for any additional shielding that may be required.

GENERAL MODULAR LABORATORY DESIGN CONCEPT

The laboratories are the primary functional purpose of the Main Laboratory building. Spaces, utility services and mechanical distribution are to be associated with a modular approach in their design. The laboratory module establishes the functional building block on which the laboratories are based. The basic module size will be a block of space 11' wide x 33' long and 9'-6" high. The 11'-0" dimension is established on the premise that there is typically 2'-6" of counter top on each side with a 5'-0" aisle of clear space. The remaining dimension is found within the wall from the outside of finished face to the center line of the wall. Based on using a typical 6" wall, the remaining 6" of overall 11'-0" allows for variability in equipment dimensions and other items, allowing for a 5'-0" clear aisle to be maintained. Whether open or closed laboratories, this dimension maximizes flexibility. Combinations of this building block can form space for large open labs, instrument and support areas or spaces that may need only a single module wide and long, serving as a vestibule or storage space. The Program Space spreadsheet located at the end of this section utilizes this building block as the basis of the net square footage calculations. Keeping the module the same in both axes allows for labs to be oriented in either direction within the floor plans that will be developed.

Using this modular approach, the building design and its structural layout should correspond to the established laboratory module. Combining a structural system grid and laboratory space layout designed around an established module assures for flexibility for changes over the life of the building. Smaller spaces can be opened up or large spaces subdivided; the overall strategy is to allow the building to be compartmentalized as required over time. Science is continuously changing and evolving and so should the facilities for the New York State Life Sciences Public Health Laboratory, which needs to serve the testing and research activities of the New York State Department of Health for the next 50 years.



Based on program square footages, adjacencies, codes & zoning, site configurations and overall scale of the building, the following are guiding principles that will facilitate the successful blocking and stacking of the New York State Life Sciences Public Health Laboratory. Note that all laboratory space must abide by all appropriate and/or required regulatory authorities.

- Open laboratory floor areas
- Contiguous program distribution
- Central support with core building functions such as shafts & vertical circulation
- Separation of office & laboratory zoning
- Access to natural lighting
- Common wet, dry and work zones, maximizing efficiencies
- Common 'ghost' corridors within laboratory zone

- Containment requirements and appropriate directional airflow
- Regulatory-based separation of sample & waste streams
- Centralized mail, receiving & accessioning
- Chain-of-custody requirements
- Material flow: clean & dirty
- Personnel flow
- Waste flow
- Animal Flow
- Placement of chemically intensive spaces closest to mechanical exhaust
- Contiguous program adjacencies
- Separation of air streams
- Mechanical supply and exhaust efficiencies
- Central service corridors for ease of access to critical MEP system components outside of laboratories
- Separate service and personnel traffic flows

THE TRANS-SHIPPING AND WAREHOUSE FACILITY

The Trans-Shipping and Warehouse Facility will be the materials management buffer for the Main Laboratory Building. It will be where all specimens, samples, materials, equipment, chemicals and animals will be received, with the exception of rabies specimens that will be delivered directly to the rabies lab in the Main Laboratory Building and unknown hazardous samples that will be delivered directly to the All Hazards Receipt Facility by law enforcement. The facility will also be the central location for waste management, including being the collection point for all chemical, biological, radiological and general waste before pick-up and removal from the complex. The facility will include a large loading dock with automatic dock levelers to accommodate both large tractor trailers and box and commercial type trucks.

BUILDING FUNCTIONS

The building will have 5 primary functions. Streamlining the operations of these functions will be key to the success of the facility.

- Receiving/Mailroom & Asset Management: This is the entry to the campus for all items from mail to animals as well as the offices needed to administer the facility.
- Warehouse: This will be the primary warehouse for the campus for storage of wet and dry laboratory supplies.
- Building Waste and Recycling: All waste types will be picked up at this location.
- Archival Sample Storage: A (-80c) Freezer Farm and (4c) Environmental Rooms will provide long-term archival storage of specimens.
- Animal Receiving & Quarantine: Rodents will be received and quarantined here before being moved into the vivarium in the Main Laboratory Building.

Receiving/Mailroom & Asset Management. These functions will consist of the loading dock, receiving area and space for unpacking of multiple types of packages. Careful planning is required to define the environment, PPE, equipment and area required for these operations. There will also be offices, a break room, and bathrooms.

Warehouse. Items stored in this area include, but are not limited to, raw materials, laboratory disposables in bulk, chemicals, new glassware, packing material, gas cylinders, and personal protection equipment. The spaces will range from a large ventilated, temperature-controlled warehouse to walk-in environmental rooms.

Building Waste and Recycling. These spaces will be designed to contain the waste for the entire Public Health Live Sciences Complex. Estimated volumes of various kinds of waste will need to be confirmed as well as the appropriate environmental conditions for storage. The Facility needs to be designed to prevent cross contamination of waste with other material flows.

Archival Sample Storage. This large space will provide long-term archival storage of samples in ~350 (-80c) freezers and 5 (4c) environmental rooms. The space will have a very large electrical and heat load and will also require ~700 point-monitoring leads (2 per freezer). All the electrical supply should be on emergency power. This space should also be designed to allow for easy transport of freezers to and from the instrumentation/refrigeration shop for repair.

Animal Receiving & Quarantine. The vivarium quarantine space will be designed to meet AAALAC accreditation standards. Animals will be received in a dedicated space and then be moved directly into a

quarantine holding area without entering back into the main facility corridors. The caging in the quarantine vivarium will be disposable. There will be no cage washing area in the Trans-Shipping and Warehouse Facility. The holding and procedure rooms will be designed to meet the same requirements as the vivarium in the Main Laboratory Building. The quarantine area will be designed to accept primarily mice.

BUILDING WORKFLOW AND SPACE REQUIREMENTS

The Trans-Shipping and Warehouse Facility should be designed to provide for dedicated paths for employees, fork-lift traffic, intake shipments, and waste flows to be maximally efficient while maintaining a safe work environment. Fork-lift traffic will run between the loading dock and storage warehouse. Safe facilities for fork-lift charging stations and weather protection should be in close proximity to the loading dock.

Loading Dock Area. The loading dock should be designed to allow flexibility in the size, type and schedule of deliveries. A variety of dock types should be considered for this project. Provisions for dock levelers, scissor lifts, ramps and stairs should be planned. Multiple truck bays would allow for flexibility in deliveries. A dock manager will oversee the operations of the loading area and will direct deliveries and shipment to the correct location based on the organization of the facility.

Waste Management. The Trans-Shipping and Warehouse Facility will be the final holding point for the shipment of waste from the complex. There will be multiple waste streams coming from the Main Laboratory Building (domestic general and recyclable, biological, chemical, radiological, animal/necropsy, hazardous, and controlled substance waste) that will be subject to regulatory requirements that dictate handling, separation and documentation. Waste located in the facility will be properly decontaminated, packaged and/or neutralized, based on its type, prior to arrival at the facility. Specialized haulers will be hired to dispose of waste requiring incineration. Design of the facility should also include consideration of how to handle pallet, boxing and wrapping debris generated by mailroom/receiving activities.

Mail. The Trans-Shipping and Warehouse Facility will be where all incoming and outgoing mail will be received for the complex. Most items coming to the facility will be from known and trusted sources. However, there will be items mailed to the laboratory that will require screening prior to being distributed. Facilities for screening and isolating items should be a consideration during design.

Warehouse. The warehouse will be the complex's centralized storage facility. A wide diversity of materials will be stored, including, but not limited to, disposable laboratory supplies (tips, tubes, PPE, etc), equipment and equipment parts, and mechanical, electrical, plumbing and general building supplies. Some items will be bulk palletized, others will vary in size and quantity. Some items will require cold room storage, so, provisions for environmental rooms are required. A flexible and efficient warehouse design will be needed to support a laboratory of this size and with such a high diversity of material types and storage needs. A warehouse planning study should be provided identifying the specific requirements and strategies for solving the warehouse storage needs. There are typically 3 types of philosophies: typical deep-lane storage, narrow aisle, and very narrow aisle storage. The approach chosen will depend on the type of storage required and type of fork truck selected. Provisions for fork lift charging stations must also be part of the operational design of the warehouse. Analysis should be undertaken to assess the quantities, sizes, and form factors to right-size and chose the proper storage and retrieval systems. The design team should consider engaging a material handling consultant in the analysis and development of warehouse design.

There will be areas requiring controlled access because of chain-of-custody, controlled substance, or biosafety or biosecurity reasons. Access to these areas should be by lockable sectioned-off areas within the warehouse or in separated spaces. Access to these areas will be by card key readers where appropriate. Visual monitoring will be provided by means of video surveillance using CCTV Cameras monitored from Central Security Command Center as needed.

Chemical and Cylinder Storage. The warehouse will control the supply of chemicals and cylinders for the complex. The Main Laboratory Building will be the largest user of such items. Careful consideration of the quantities and types of chemicals stored in or near the warehouse area should be done. The use of modular pre-fabricated chemical storage buildings or constructed high hazard areas should be reviewed and considered. Any design must comply with all NFPA and New York State Building and Fire Codes. Cylinder storage will be for both full and empty tanks. Tanks will be delivered and shipped from this facility. Staging areas should be considered for capacity, separation and ventilation. Whereas the majority of the gases being used are inert, suppression and monitoring for specific hazards should be carefully studied.

The selected design team should engage a consultant who specializes in the quantitative analysis of chemicals and their physical properties, overlaying the analysis with all proper local code requirements and providing recommendations as to the most effective and safe means to store the required quantities. All proposed solutions should also be coordinated with a campus wide threat/risk analysis with primary focus being on the Main Laboratory building.

Bulk gas storage. It is planned that liquid nitrogen and carbon dioxide, along with all other specialty gasses, will be provided as cylinders distributed directly to the laboratories in the Main Laboratory Building requiring such gasses. Idealized locations for central distribution of cylinders should be a consideration during the design of the Main Laboratory Building based on usage and quantities of cylinders. Proper handling and protection from hazardous gases, if relevant, must be designed to codes, standards and regulations for each gas, as required.

ALL HAZARDS RECEIPT FACILITY

The purpose of the All Hazards Receipt Facility (AHRF) is to screen samples of unknown chemical, biological, explosive, or radiological hazards and to mitigate those hazards to protect the Main Laboratory Building and staff from exposure and/or injury. The facility will comply with the US Department of Homeland Security and the US Environmental Protection Agency's All Hazards Receipt Facility Screening Protocol dated September 2008 (DHS/S&T-PUB-08-0001 & EPA/600/R-08/105). The AHRF will receive samples from law enforcement agencies. The AHRF is a very secure containment laboratory with dedicated laboratory space, mechanical systems and equipment. The AHRF requirements defined within this Basis of Design will need to be reevaluated with the Department of Health during the design process.

4 LIST OF SPACES SUMMARY

This section of the BOD includes tabulated net and gross square footage totals for the four main buildings of the Life Sciences Public Health Laboratory Complex (Main Laboratory Building, Trans-Shipping and Warehouse Facility, All Hazards Receipt Facility, Central Utility Plant) and a more detailed breakdown of the Main Laboratory Building inclusive of room quantities, rooms types, fixed equipment totals, and staffing levels. A more detailed breakdown by specific program will be provided at the time of the RFP.

SUMMARY

			Program Rev 4 12/14/2018 Room Quantity		NSF Per Space	Current Program NSF	Estimated Gross Square footage based on Bldg Efficiency Target	
MAIN LABORATORY BUILDING - NYSLSPHL								MAIN LABORATORY
Administration & Operations	35%	-	628			129,338	215,563	
Div. of Environmental Health Sciences	17%	-	248			64,572	107,620	
Division of Genetics	11%	-	181			39,601	66,002	
Division of Infectious Diseases	27%	-	492			98,277	163,795	
Division of Translational Medicine	8%	-	113			31,056	51,760	
Division of Lab Quality Certification	2%	-	80			6,272	10,453	
		-						
SUBTOTALS	100%	-	1,742			369,116	615,193	
TRANS-SHIPPING AND WAREHOUSE FACILITY - NYSLSPHL								TRANS-SHIPPING AND WAREHOUSE FACILITY
Trans-Shipping and Warehouse Facility	100%	-	72			63,675	90,964	
		-						
		-						
SUBTOTALS		-	72			63,675	90,964	
ALL-HAZARDS RECEIPT FACILITY - NYSLSPHL								ALL HAZARDS RECEIPT FACILITY
All-Hazards Receipt Facility	100%	-	12			4,840	6,050	
		-						
		-						
SUBTOTALS		-	12			4,840	6,050	
Central Utlity Plant Building - NYSLSPHL								CUP BUILDING
Administration & Operations	100%	-	9			46,366	51,518	
		-						
		-						
SUBTOTALS		-	9			46,366	51,518	
ALL FACILITIES TOTALS								SUMMARY TOTALS
Summary of SubTotals from Above			1,835			483,997	763,725	

MAIN LABORATORY BUILDING

Estimated Bldg Efficiency for GSF calculations -------->	60%					369,116	615,193
Active Date ---> 8/17/2018					Program Rev 1	8/17/2018	
Modified 8/17/2018 — Space Name	Space Type	Operational Status	Room Quantity	NSF Per Space	Current Program NSF		Estimated Gross Square footage based on Bldg Efficiency Target
SUMMARY							
					Program	8/17/2018	
MAIN LABORATORY BUILDING - NYSLSPHL							
Administration & Operations	35%		628		129,338		215,563
Div. of Environmental Health Sciences	17%		248		64,572		107,620
Division of Genetics	11%		181		39,601		66,002
Division of Infectious Diseases	27%		492		98,277		163,795
Division of Translational Medicine	8%		113		31,056		51,760
Division of Lab Quality Certification	2%		80		6,272		10,453
TOTALS FROM NET SQ FT ABOVE	100%		1,742		369,116		615,193
Operational Status							
Operational Status 1	22%				79,795		132,992
Operational Status 2	59%				217,710		362,850
Operational Status 3	19%				71,611		119,352

Fume Hoods	Biosafety Cabinet	Environmental Rm	Autoclaves Large	Autoclaves Med	Glasswashers	Glasswear Oven	Point Exhaust		Staffing Counts: Staff as Requested	Staffing Counts: Vacant Funded	Staffing Counts: Existing Staff	Staffing Counts: Total	Comments
17	30	14	10	18	10	4	15				290	290	
109	24	30					88				135	135	
24	16	18					24				120	120	
28	113	73		9			5		-	-	253	253	
20	32	16					11				43	43	
											78	78	
198	215	151	10	27	10	4	143	-	-	-	919	919	

Operational Status Legend:
Status 1 - All systems operational - Space fully operational
Status 2 - Maintain critical systems and emergency power - Space partially operational or at least within operational conditions
Status 3 - No systems operational - Space is not operational

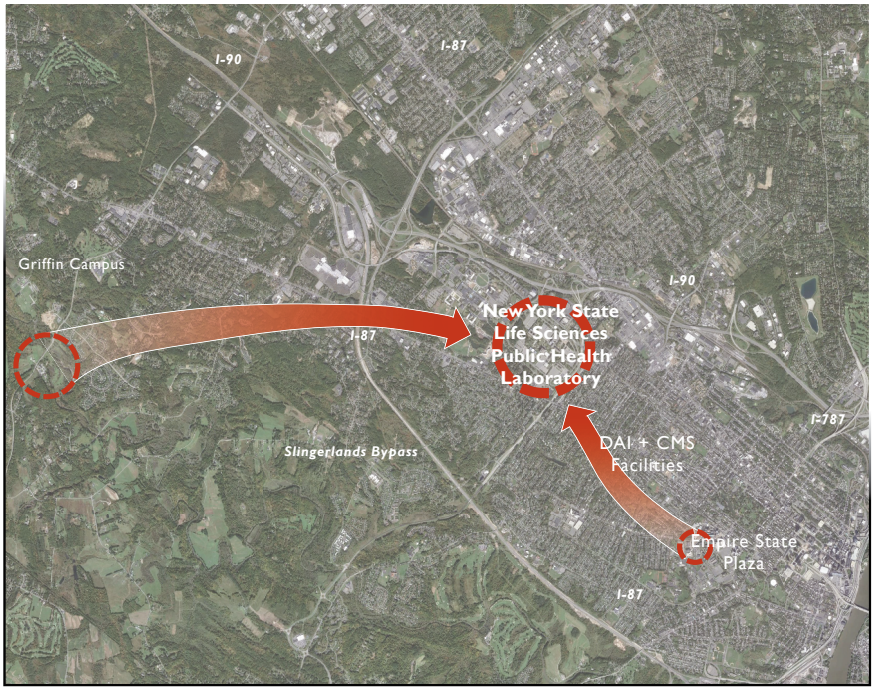
MAIN LABORATORY BUILDING

Estimated Bldg Efficiency for GSF calculations -------->	60%			369,116	615,193
Active Date ---> 8/17/2018			Program Rev 1	8/17/2018	
Modified 8/17/2018 Space Name	Space Type	Operational Status	Room Quantity	NSF Per Space	Current Program NSF	Estimated Gross Square footage based on Bldg Efficiency Target
BSL3	5.7%				21,162	35,270
BSL2	30.5%				112,552	187,587
Chemistry	9.5%				34,969	58,282
Amenities	2.8%				10,406	17,343
Office A	0.9%				3,146	5,243
Office B	5.8%				21,476	35,793
Office C	0.0%				60	100
Cubical A	0.7%				2,420	4,033
Cubical B	1.7%				6,272	10,453
Cubical C	2.2%				8,070	13,450
In-Lab Only						
Conference	0.1%				363	605
ACL2						
ACL3	1.4%				5,132	8,553
Bldg Suprt	8.5%				31,246	52,077
Lab Suprt	17.5%				64,554	107,590
Waste						
Maintenance	2.8%				10,406	17,343
Mechanical						
Electrical						
Plumbing						
Circulation						
Parking						
ABSL-2	3.5%				13,027	21,712
ABSL-3	1.2%				4,557	7,595
ISO 5	0.3%				1,048	1,747
ISO 6						
ISO 7	1.3%				4,840	8,067
ISO 8						
Hot Desk	2.6%				9,420	15,700
Hotel Space	1.1%				3,990	6,650

5 SITE SUMMARY

CONSOLIDATION

The New York State Life Sciences Public Health Laboratory (NYSLSPHL) will consist of several key facilities collocated in a campus-like setting on the Harriman State Office Building Campus : the Main Laboratory Building, Trans-Shipping and Warehouse Facility, Security Gatehouses, All Hazards Receipt Facility, Central Utility Plant. The new laboratory consolidates approximately 949,700 square feet of space currently distributed across several sites into approximately 763,000 square feet on a 27 acre site.



SUSTAINABILITY

"The State of New York is dedicated to the mutually compatible goals of environmental protection, energy security, and economic growth." – Executive Order 88

Sustainable design, the process to co-optimize the economic, environmental and social performance of systems, is particularly critical in the geographic context of the New York State Life Sciences Public Health Laboratory. Opportunities exist to reduce capital costs of infrastructure and future operating costs benefitting the New York State Department of Health. Efficient means of generation, treatment and supply of services can greatly decrease energy use, greenhouse gas emissions, use of non-renewable resources and the destruction of valuable habitat.

On December 28, 2012 the State of New York adopted Executive Order 88. In accordance with the adopted order all state agencies are required to improve the energy efficiency of state buildings. By April 1, 2020, all state agencies shall collectively reduce the average source energy use per square foot in state-owned and managed buildings by 20% from a baseline of the average such buildings for fiscal year 2010/2011. Using goals of Executive Order 88 as a guideline, the NYSLSPHL is envisioned as being at minimum a LEED NC Silver facility focused on limiting carbon emissions, water and air pollution, and waste generation.

DESIGN INTENT

The site planning intent is to create a safe, environmentally sensitive and efficient laboratory site connecting to and reinforcing the character of the Harriman Campus. The New York State Life Sciences Public Health Laboratory is envisioned as a high tech site utilizing best practices in engineering, sustainability, place-making, landscape architecture and architecture.

ACREAGE

The preferred site for the New York State Life Sciences Public Health Laboratory is approximately 27 acres. Due primarily to security requirements and setbacks the net developable area for occupied, secured facilities is approximately 17 acres.

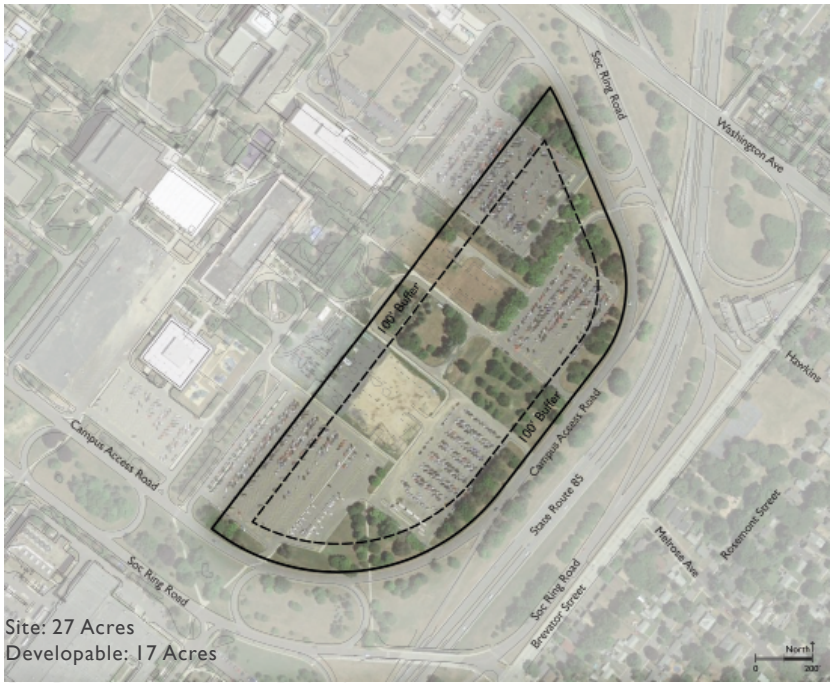
REGULATORY REQUIREMENTS

The New York State Life Sciences Public Health Laboratory site located on the Harriman Campus is zoned MU-CI, or Mixed-use Campus/Institutional by the City of Albany. The purpose of the zoning district is to provide for large public and institutional facilities such as hospitals, museums, and institutions of higher education. Additional uses include a variety of retail, commercial, and residential uses traditionally associated with these large projects. Laboratory facilities are included within the definition of Office facilities.

Uses such as laboratories, adult day care, health clubs, personal service outlets, restaurants, rooming house/SRO, taverns, trade schools and satellite dish equipment all require a special use permit. Other requirements of MU-CI zoning include:

- There are no restrictions to buildable sq feet; however there are yard coverage and building height restrictions serving to limit the GSF.
- Within the MU-CI zoning, building heights are restricted to a maximum of 8 1/2 stories. The maximum height of accessory buildings is 1 1/2 stories.
- Setbacks for MU-CI zoning are a maximum of 20 feet along the street or public right of way, and a minimum of 0 feet on the rear and sides of the property.
- Minimum parking requirements are expected to exceed the projected actual demand due to laboratories being classified as an office use.
- For MU-CI zoned parcels there is a maximum lot coverage of 60% including paved surfaces and structures.
- Dependent upon the final master plan, it may be necessary to acquire zoning variances to cost effectively site the facility and all the required appurtenances.
- Variance may be required to accommodate some of the requirements listed above.

For more information on MU-CI zoning refer to the City of Albany, New York's Unified Sustainable Development Ordinance (Section 375-2(D)(6): MU-CI Mixed-Use Campus/Institutional).



SITE BASED PROGRAM

CAPACITY

The program area has a site development envelope of approximately 388,050 square feet. The envelope includes conceptual building footprints for the Main Laboratory Building (100,000 sq. ft.), Trans-Shipping and Warehouse Facility (90,000 sq. ft), the All-Hazards Receipt Facility (6,050 sq. ft.), and the Central Utility Plant (51,000 sq. ft.). In addition to the conceptual facility footprints, the development envelope also includes assumptions for stormwater detention facilities (26,000 sq. ft.), visitor surface parking area (45,000 sq. ft.), service yard area (26,000 sq. ft.), and streets/drives (44,000 sq. ft.). Required security setbacks have been excluded from the development envelope number. Depending on the final design of the facilities and the locations of key site components the development envelope number may adjust.

With a site area of 27 acres and a program of 763,725 GSF the site wide FAR is 0.65. Based upon the current zoning the site must maintain 40% permeable surface.

The Design-Build team will develop a clear, well-articulated site design concept that facilitates safe movement of vehicles, people, samples and supplies into and out of the site and among the various campus buildings, all with an eye to optimizing the central public health activities of Wadsworth Center. At the same time, it is expected that the overall site concept will be innovative, bold and aesthetically pleasing.

Below is an example of one possible site zoning design concept. This is a suggestion for illustrative purposes only. It is expected that the Design-Build team will develop their own overall vision for how the site will be developed.

Main Laboratory - B1 Zone

The B1 Zone is primarily intended for the placement of the main consolidated laboratory facility, oriented and configured to enhance the site character established by the Common Area (C1). Open space will be provided within the B1 zone including both publicly accessible and secure spaces. The main laboratory zone will need to have a direct connection to the B2 Zone.

Outbuildings - B2 Zone

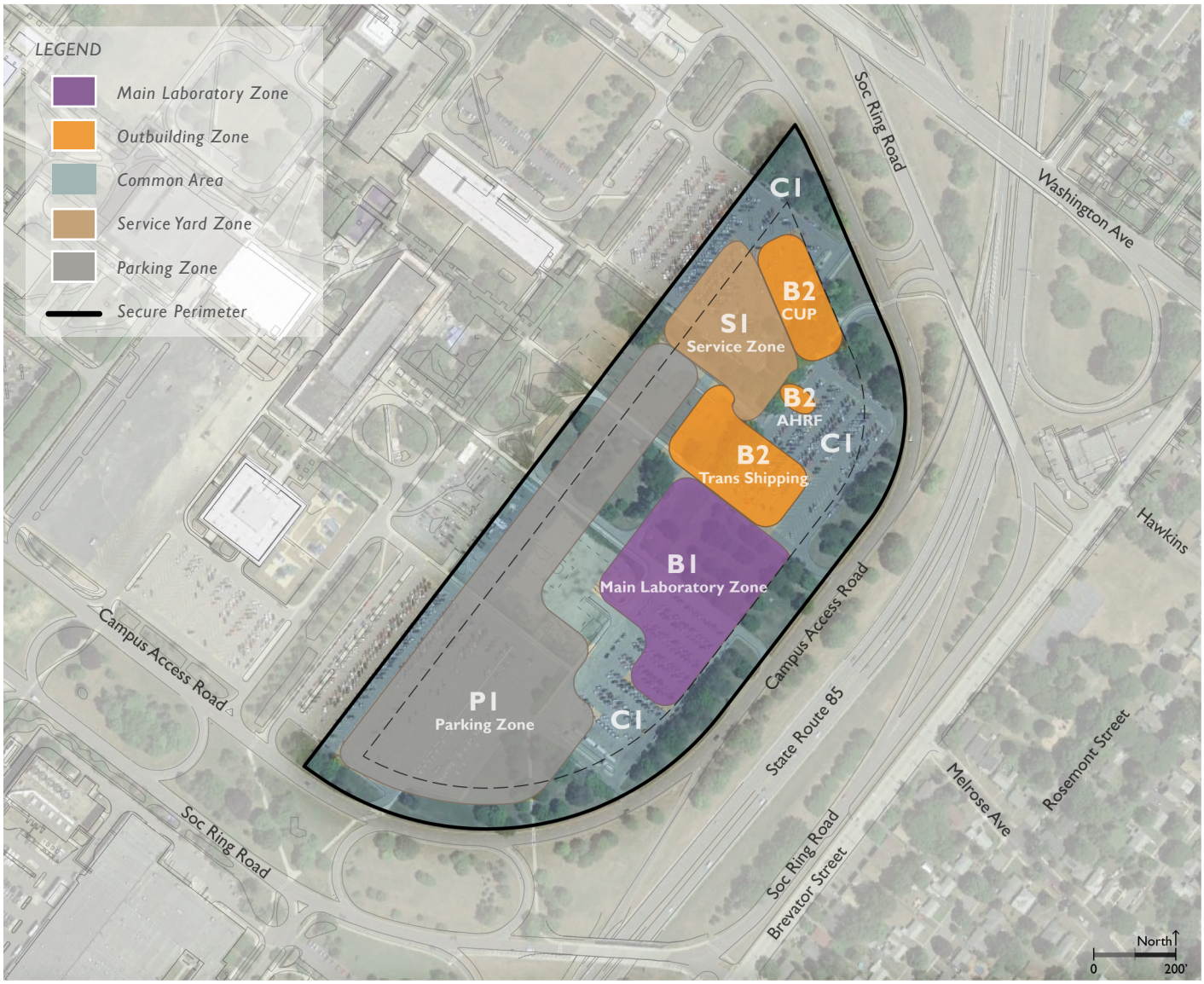
The B2 Zone is primarily intended for the placement of institutional support facilities, oriented and configured to optimize the operation of the New York State Life Sciences Public Health Laboratory. This zone may include the following facilities:

- Central Utility Plant
- Trans-Shipping and Warehouse
- All Hazards Receipt Facility

Limited service yard areas may be located in the B2 Zone if the facility requires a service yard and is unable to be located proximate to the main laboratory

Service Yard - S1 Zone

The S1 Zone abuts the B2 zones and is intended to provide sufficient area flexibility to accommodate all shared service functions. The zone includes loading dock functions and a few areas with drains and oil separators for washing any potential contaminants off of delivery, maintenance and service vehicles. Limited surface parking spaces are allowed within the zone.



Site Zone Diagram

Parking - P1 Zone

The P1 Zone is intended to provide the majority of the required employee and visitor surface parking.

Utilization of bioswales and rain gardens should be considered for all surface parking for employees to manage stormwater, and have ample tree shading per any applicable code and in accordance with achieving LEED credits.

Visitor parking shall be accommodated in surface lots and have a minimum of 100 spaces. Utilization of bioswales and rain gardens should be considered for all visitor surface parking areas to mitigate stormwater impacts, and have ample tree shading per applicable code and in accordance with achieving LEED credits.

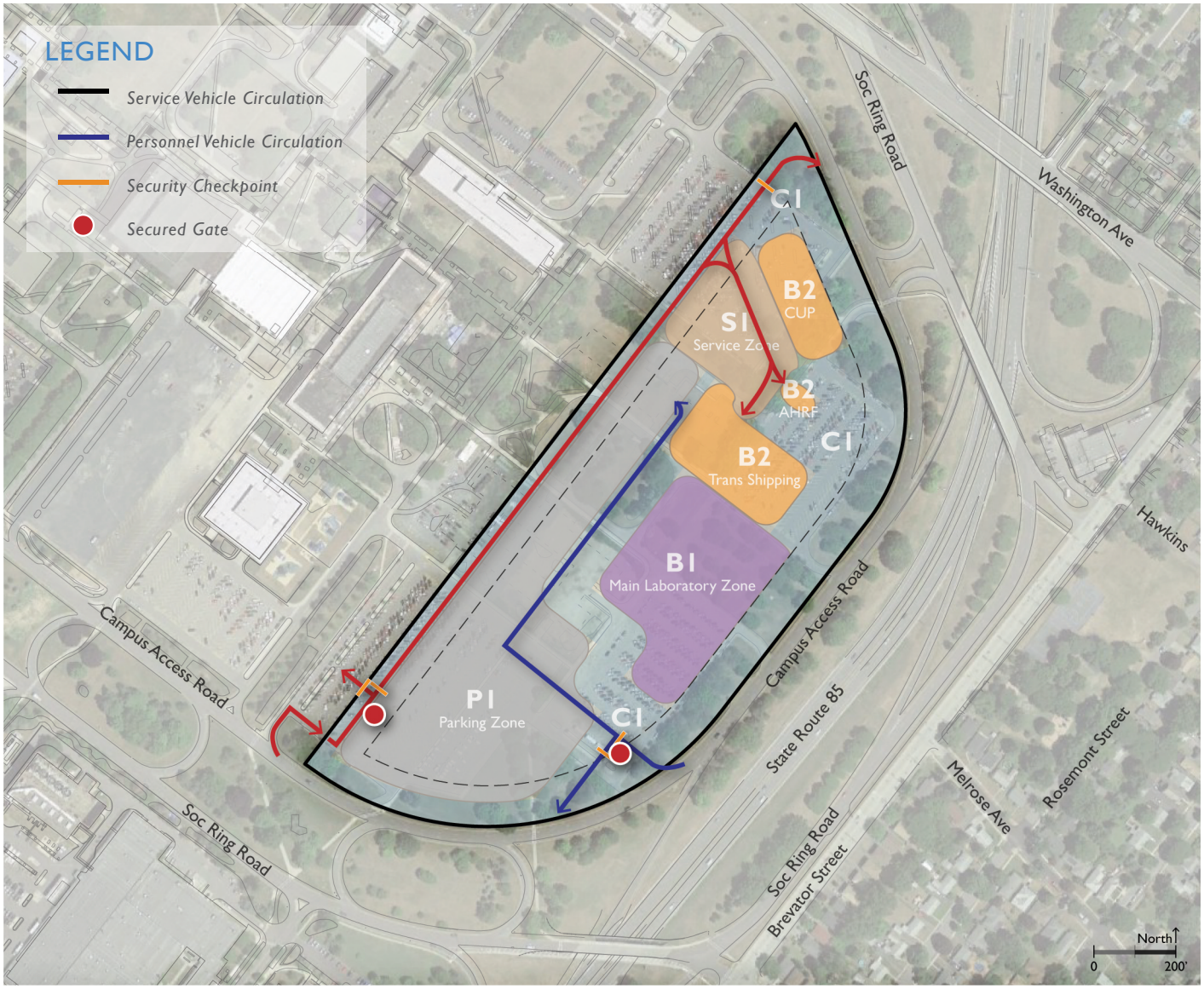
Common Areas - C1 Zone

The C1 Zone is intended to be an organizing element linking the entire site, providing a sense of place and a transition to the surrounding campus. The zone should offer a variety of open spaces for gathering, recreation, and interaction. Open space shall be designed with high quality site furnishings, lighting, hardscape materials and plantings.

Stormwater facilities are located in the C1 Zone, be distributed across the site and not designed as one stormwater pond. Bioswales, rain gardens and pervious paving shall be used to mitigate stormwater impacts and limit the size of the stormwater detention facilities.

Primary circulation occurs on streets and drives beginning within the C1 zone. The design of these streets shall:

1. Create a safe and secure site
2. Provide clear, efficient means of ingress and egress
3. Segregate the various service vehicle, and visitor/employee vehicle traffic flows



6 SYSTEMS PERFORMANCE CRITERIA

This section of the BOD summarizes applicable codes, guidelines, and standards as apply to the Main Laboratory Building, the Trans-Shipping and Warehouse Facility, the All Hazards Receipt Facility, and the Central Utility Plant. More detailed information with respect to structural, architectural, mechanical, building automation systems, plumbing, electrical, lighting, and security and communication systems for each building will be provided at the time of the RFP.

NEW YORK STATE LIFE SCIENCES PUBLIC HEALTH LABORATORY MAIN LABORATORY BUILDING

CODE ANALYSIS

APPLICABLE CODES, GUIDELINES & STANDARDS

The following is a partial listing of applicable codes, rules, regulations, standards and guidelines. All references are to be the current version at the time of the design:

- International Building Code with New York State
- ICC/ANSI A117.1 – Accessible and Usable Buildings and Facilities
- Fuel Gas Code of New York State
- International Energy Conservation Construction Code of New York State
- Mechanical Code of New York State
- Plumbing Code of New York State
- International Fire Code of New York State
- Executive Order 111
- Executive Order 88 & Smart Buildings
- USGBC LEED Rating System
- National Institutes of Health Design Requirements Manual for Biomedical Laboratories and Animal Research Facilities
- CDC Biosafety in Microbiological and Biomedical Laboratories; 5th Edition
- Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)
- USDA 242.1 Section 9 (where applicable)
- CFR 42 Part 73
- DOD Uniform Code
- OSHA
- NFPA
- AIHA Guide
- NSF for Biological Safety Cabinets
- National Research Council Guide for the Care and Use of Laboratory Animals
- ANSI (American National Standards Institute)
- NYS DEC (New York State Department of Environmental Conservation)
- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)
- EPA (environmental Protection Agency)
- ASTM (American Society for Testing and Materials)
- ISO (international Standards Organization)
- Underwriter Laboratories (UL)
- US Department of Health and Human Services/DOH Health Emergency Preparedness Program – Protection requirements for elements of the National Strategic Stockpile
- US Department of Homeland Security – Comply with Chemical Security Protection Standards
- US Department of Agriculture – Meet requirements for the protection of Laboratory Animals
- US Center for Disease Control – Comply with requirements for the Protection and Security of Select Agents and Toxins
- US Department of Energy/DOH Bureau of Environmental Radiation Protection – Protection and Security of Regulated Materials
- US Drug Enforcement Agency/DOH Bureau of Narcotic Enforcement – Protection and Security of Regulated Drugs and Chemicals

CODE ANALYSIS

- US Center for Disease Control – Security requirements for Bio-Safety Laboratories
- US Federal Bureau of Investigation – Comply with Forensic Laboratory Protective and Security requirements
- NYS Office of Information Technology Services Information Security Policy NYS-P03-002
- National Institute of Standards and Technology (NIST) Special Publications (SP) 800-53, Security and Privacy Controls for Federal Information Systems and Organizations
- NYS Fire Prevention and Control – Facility Emergency Preparedness and Life Safety
- NYS DOH Bureau of Environmental Radiation Protection
- NYS DOH CLEP
- NYS DOH ELAP
- National Environmental Laboratory Accreditation Program (NELAP)
- NYS DOL PESH (Public Employees Safety and Health)
- NYS DOH Laboratory Animal Welfare Program
- CLIA
- Florida DOH
- A2LA
- The USDA Animal Welfare Act Regulations
- Public Health Service (PHS) Policy
- International Standard ISO/IEC 27002, Information Technology – Security Techniques – Code of Practice for Information Security Controls
- Federal Information Security Management Act (FISMA).

It is the responsibility of the Design-Build team to ensure designs meet all code and regulatory compliance. In addition to those codes, rules, and regulations determined to be applicable, the Design-Builder shall also comply with the following: the latest NYS Building Code, the latest Energy Code, Executive Order 88, USGBC LEED Rating System (LEED v4), NYS DEC stormwater, air and petroleum bulk storage regulations, NYSERDA requirements and NYS Green Building Construction Act.

USE AND OCCUPANCY

The code study itemized below was to develop a baseline for cost and generalized limitations typically found in this type of facility. All information within this document is subject to design concepts developed in the future. The Main Laboratory Building will involve, approximately 650,000 square feet of new construction. Refer to Section 3 of this Basis of Design for itemization of spaces and types. Based on preliminary site assessments and for the purposes of this basis of design, it is assumed each floor plate will be approximately between 100,000 and 125,000 square feet. This will create a building that will be between 6-7 stories above grade with an additional mechanical penthouse above. The building will be classified as Mixed Use, Separated Uses in accordance with IBC. The occupancy for the building will generally fall under the use group B as defined in the IBC.

Classification of occupancy for the building will be determined based on the quantities of hazardous chemicals stored. If the maximum allowable quantities per IBC Table 307.7(1) in each control area are exceeded, the building or portions of the building may be classified as Use Group H.

CONSTRUCTION TYPE

For separated mixed uses, the required construction type for each fire area is required to comply with the height and area limitations for the Use Group. The construction for the building will be Type 1B construction.

HEIGHT AND AREA LIMITATIONS

The maximum permitted height for Type IB occupancy in accordance with IBC Table 503 is as follows:

Occupancy	Group B	Group H	Group H-3	Group A-1
Height Limitation	11 Stories	Varies	6 Stories	5 Stories
Sprinkler Increase	+1 Story/20 feet	+1 Story/20 feet (for Group H-4 only)	Not Permitted	+1 Story/20 feet
Total Allowable				
Height	180’	Varies	6 Stories	6 Stories

Per IBC Table 503, for construction type IB, there is no maximum allowable building area limitation for Group B; Group S-2 shall comply with the maximum building area 94,800 SF based on automatic sprinkler protection. The allowable building area limitation for Group H varies based on classification as H-1, H-2, H-3, H-4, or H-5. The allowable area for Group H-1, H-2, and H-3 occupancies are not permitted to be increased based on automatic sprinkler protection. Group H-3 occupancies are limited to 60,000 SF. Group A-1, Assembly Occupancies are unlimited in square footage.

MIXED USE SEPARATIONS

Occupancy	Group A	Group B	Group H-1	Group H-3
Group A	-	1 hr	Not Permitted	2 hr
Group B	1 hr	-	Not Permitted	1 hr
Group H-1	Not Permitted	Not Permitted	-	Not Permitted
Group H-3	2 hr	1 hr	Not Permitted	-

As identified, the Main Laboratory Building will be predominantly a B Occupancy. However, per Table 508.4 of the IBC separations between Use Groups is required. Above is a summary of Use Groups likely to be part of the NYSLSPHL.

CONTROL AREAS

Maximum Quantity of Hazardous Materials per Control Area. The maximum quantity of hazardous materials within a single control area of a fully sprinkled building is in accordance with IBC Table 307.7(1). In order to be considered a Business Use Group, the control areas must contain less than the quantities listed. If the amount of hazardous material exceeds that permitted in a single control area, either the hazardous materials can be divided among multiple control areas to maintain the Group B occupancy designation or the area must be designated as a Group H occupancy.

DESIGN AND NUMBER OF CONTROL AREAS			
Floor Level above Grade	Percentage of the maximum allowable quantity per control area	Maximum number of control areas per floor	Fire Resistance rating for fire barriers in hours
1	100	4	1
2	75	3	1
3	50	2	1
4	12.5	2	2
5	12.5	2	2

TRANS-SHIPPING AND WAREHOUSE FACILITY

CODE ANALYSIS

APPLICABLE CODES, GUIDELINES + STANDARDS

The following is a partial listing of applicable codes:

a. Building Code with New York State
b. Fuel Gas Code of New York State
c. Energy Conservation Construction Code of New York State
d. Mechanical Code of New York State
e. Plumbing Code of New York State
f. Fire Code of New York State
g. Executive Order 111
h. Executive Order 88
i. OSHA
j. NFPA 101 Life Safety
k. NFPA 30 Flammable and Combustible Liquids Code
l. NFPA 70 National Electrical Code
m. AAALAC

USE AND OCCUPANCY

The Trans-Shipping and Warehouse Facility will be the primary receiving center for the campus. It will contain a central storage warehouse, mail receiving and sorting, centralized waste holding, ancillary laboratories, animal receiving and quarantine and related offices. Additionally, it will house a large long-term archival sample storage freezer farm containing both 4c environmental rooms as well as large quantities of -80c freezers.

The building will be classified as Mixed Use, Separated Uses in accordance with IBC. The occupancy for the building will generally fall under the use Low Hazard Group S-2 as defined in the IBC.

Classification of occupancy for the building will be determined based on the quantities and types of goods stored.

CONSTRUCTION TYPE

For separated mixed uses, the required construction type for each fire area is required to comply with the height and area limitations for the Use Group. The construction for the building will be Type 1A construction.

CODE ANALYSIS

HEIGHT AND AREA LIMITATIONS

The maximum permitted height for Type IIB occupancy in accordance with IBC Table 503 is as follows:

Occupancy	Group S-2	Group B
Height Limitation	5 Stories	5 Stories
Sprinkler Increase	+1 Story/20 feet	+1 Story/20 feet
Total Allowable Height	6 Stories	6 Stories

Per IBC Table 503, for construction type IIA, the maximum allowable building area limitation for Group S-2 is 78,000 sf, based on automatic sprinkler protection allowable area increase; Group B shall comply with the maximum building area 75,000 SF based on automatic sprinkler protection allowable area increase.

COMBUSTIBLE STORAGE

1. It is anticipated that the warehouse will require rack storage of various materials. Those materials will range from consumables, equipment, to chemicals. An in-depth study should be completed as to the quantity, type and classification of the components that will be stored. However, it should be assumed that a combination of Class I, Class II, Class III and IV Commodities. Some plastics of Group C should also be considered being stored within the warehouse area.
2. Per Section 413 of the IBC, rack storage will comply with the International Fire Code. Storage of items within the warehouse will comply with Chapter 23, High-piled Combustible Storage.

HAZARDOUS STORAGE

Hazardous storage will be a combination of consumables as well as waste and will be separate both in consumable/waste as well as types. Types of hazards will vary but should include the following at a minimum:

- Chemicals including: alcohol, solvents, acids, bases, flammables, corrosives & cryogenics
- Radiological: Regulated nuclear waste
- Biological: Red-bagged medical waste & biological waste holding for incineration

ALL HAZARDS RECEIPT FACILITY

CODE ANALYSIS

APPLICABLE CODES, GUIDELINES & STANDARDS

The following is a partial listing of applicable codes:

a. Building Code with New York State
b. ICC/ANSI A117.1 – Accessible and Usable Buildings and Facilities c. Fuel Gas Code of New York State
c. Energy Conservation Construction Code of New York State e. Mechanical Code of New York State
d. Plumbing Code of New York State g. Fire Code of New York State
e. Executive Order 111
f. National Institutes of Health Design Requirements Manual for j. Biomedical Laboratories and Animal Research Facilities
g. CDC Biosafety in Microbiological and Biomedical Laboratories 5th l. Edition
h. AAALAC Guide for the Care and Use of Laboratory Animals n. USDA 242.1 Section 9 (where applicable)
i. CFR 42 Part 73
j. DOD Uniform Code q. OSHA
k. NFPA 101 Life Safety
l. NFPA 30 Flammable and Combustible Liquids Code
m. NFPA 45 Standard on Fire Protection for Laboratories Using u. Chemicals
n. NFPA 55 Standard for the Storage, Use, and Handling of
o. Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks
p. NFPA 70 National Electrical Code

USE AND OCCUPANCY

This project will involve, approximately 6,000 square feet of new construction. Refer to the program list of spaces located in Section 3 of this Basis of Design for a complete list and types of space within this facility. The building is anticipated to be a single story with a mechanical penthouse located directly above serving the containment and critical lab spaces below. The occupancy for the building will generally fall under the use group B as defined in the IBC.

CONSTRUCTION TYPE

The construction for the building will be Type 1B construction.

HEIGHT AND AREA LIMITATIONS

The maximum permitted height for Type IB occupancy in accordance with IBC Table 503 this building falls within the maximum allowable height limitations established for a Group B occupancy. Per IBC Table 503, for construction type IB, there is no maximum allowable building area limitation for Group B.

CENTRAL UTILITY PLANT

CODE ANALYSIS

APPLICABLE CODES, GUIDELINES & STANDARDS

The following is a partial listing of applicable codes:

a. Building Code with New York State
b. ICC/ANSI A117.1 – Accessible and Usable Buildings and Facilities c. Fuel Gas Code of New York State
c. Energy Conservation Construction Code of New York State e. Mechanical Code of New York State
d. Plumbing Code of New York State g. Fire Code of New York State
e. Executive Order 111
f. OSHA
g. NFPA

USE AND OCCUPANCY

This project will involve, approximately 50,000 gross square feet of new construction. Refer to the program list of spaces located in Section 3 of this Basis of Design for a complete list and types of space within this facility. The building is anticipated to be a single story located within the New York State Life Science Public Health Facility campus. The occupancy for the building will generally fall under the use group F1 as defined in the IBC.

CONSTRUCTION TYPE

The construction for the building will be Type 1B construction.

HEIGHT AND AREA LIMITATIONS

The maximum permitted height for Type IB occupancy in accordance with IBC Table 503 this building falls within the maximum allowable height limitations established for a Group F1 occupancy. Per IBC Table 503, for construction type IB, there is no maximum allowable building area limitation for Group F1.