

# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE

## BASIS OF DESIGN



The Landlord, at its sole cost and expense (except where otherwise expressly provided herein), shall provide the following work as part of the Base Building scope of work for the office and lab components of the project. This document is intended to define the minimum optimal building characteristics and performance criteria acceptable. The criteria and operating characteristics discussed may be relevant to new construction only, existing refurbished construction only or both.

All elements and components of this Base Building Specification, whether stated or not, shall include all necessary items in order to meet all Zoning Regulations, Building Codes, Accessibility Codes and industry standards for a Class A mixed-use/life science building.



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## BUILDING SPECIFICATIONS



### CONSTRUCTION DOCUMENTS

The building design shall conform to the IBC Code, ADA, local and municipal codes, and state requirements.

### DESIGN CRITERIA

#### INTERIOR CEILING HEIGHTS

15'-8" in most areas on ground floor; 16'-0" at perimeter.  
9'-8" on floors 2-11 in most areas; 10'-0" at perimeter.

#### BAY SIZE

30' x 45' typical.

### SITE

- Approximately nine (9) acres of land.
- Parking based on up to 4.0/1,000 parking ratio.

### CONCRETE

- The foundation design will be determined by load requirements per recommendations of an independent geotechnical engineer. All foundation concrete will be 4,000 PSI minimum.
- The ground floor will be a structural slab. The floor will be machine troweled, finished, and cured with "Super Aqua-Cure VOX" as manufactured by Euclid.
- Above grade slabs will be comprised of 3 1/2" thick light weight concrete on 2" deep galvanized metal deck.

### FACADE

The exterior of the building will be constructed of a combination of factory finished panels (metal or architectural precast) and glass. The exterior wall system shall be insulated to meet applicable codes.

### STRUCTURAL SYSTEM

#### STRUCTURE

The structural system will consist of structural steel columns, beams and girders with concrete on metal deck slabs.

Rooftop mechanical equipment will be enclosed within a steel framed screen wall.

#### LOADING

Each floor will be designated to accommodate a live load of 100 pounds per square foot of floor area. Areas of limited size may be reinforced to support loads in addition to standard design.

#### FLOOR PENETRATIONS

The design of the building may be modified to accommodate penetrations of the floor structure and removal of portions of the floor structures to allow for the installation of improvements such as stairways and dumbwaiters in limited areas.

### GLASS, GLAZING AND ALUMINUM

Strip windows, curtain walls and storefront system will be constructed with aluminum tube with 1" thick insulated vision and spandrel glazing units on all elevations.

Glass units will be provided with Low-E type single coating. Tempered glass will be provided in areas as required by code.

Building entrance doors will match the wall system.

### FINISHES

Building lobby finishes will be class A level finishes and will include a stone tile floor, wood paneled feature walls, vinyl wall coverings, drywall ceiling and specialty ACT ceiling. Tenant suite doors to be 3' x 9' Herculite frameless doors or equal.

Toilet room finishes will be tile floors, drywall and ACT ceilings. Wood doors on individual toilet room stalls (European style) and all toilet room accessories and fixtures are included in the base building. The lavatories will be solid surface with under-mounted bowls.

Building standard manual mecho shades will be supplied and installed at completion of tenant improvements.

### ROOFING, SHEET METAL AND INSULATION

A single-ply white TPO roof will be provided. Roof insulation to be mechanically attached to meet a rating of U = 0.03. A fifteen (15) year warranty is included. All mechanical equipment on the roof will be screened.



### CONVEYING SYSTEMS

#### ELEVATORS

Passenger elevators with 3,500 lb capacity complete with operational systems, handicap accessible and architectural cab finishes will be provided. Inside dimensions for cabs will be 6'-8" W x 5'-5" D. Elevator doors will be bi-parting doors in brushed stainless steel. In addition one (1) service elevator with 5,000 lb capacity will be provided.

#### DESIGN CRITERIA

Naturally-lit European restrooms.

A complete plumbing system properly sized for sewer and water will be furnished. Both sewer and water will be connected to the municipal system.

The plumbing system will meet the National Standard Plumbing Code and the IBC requirements.

#### EQUIPMENT

- Wet column provisions consisting of a valved cold-water outlet and capped sanitary and vent connections shall be provided at two (2) riser locations.
- Internal downspouts shall be provided for all roof areas discharged to the storm sewer system. Secondary drainage will be provided as required by code.

### FIRE SPRINKLER SYSTEM

The entire building will be protected with an automatic fire suppression system. All work shall be in compliance with NFPA 13, IBC and local requirements.

All controls for the fire protection system will be connected to a central panel and alarm station.

### ELECTRICAL SYSTEM

- Primary electric service feeds will be provided underground to the building by the utility company, with pad-mounted equipment located on site.
- The electrical system is designed to a specific capacity allocated for tenant usage. Tenant's electrical lighting and power load shall not exceed a demand of .7 watt per RSF for lighting and a demand of 3 watts per RSF for power.
- Automatically controlled exterior lighting will include exterior pole lighting for safety and security.
- Emergency lighting and exit lights will be per the National Electric Code. Emergency lights will have battery/backup.
- Provide a fire alarm system to include horns and strobes at locations and quantities as required by code.

### TELEPHONE & DATA

TeleData closets are located at each floor for tenant distribution requirements. 4" sleeves will be provided on each floor in each room per floor.

### FIRE ALARM SYSTEM

Connection point will be installed on the floor for the fire alarm system. The complete core fire detection system shall be installed, operating and tested in accordance with NFPA requirements.

- One (1) remote annunciator and one (1) lobby panel to be provided.
- Pull stations to be provided at every exit, and at intermediate locations so as not to exceed 300' travel distance between stations. Return air duct detectors and heat/smoke detectors will be provided in each electrical/data communication room and mechanical spaces. Flow switch connections and supervisory valve connections to be monitored.

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## GENERAL DESIGN CRITERIA



The Landlord's Base Building Plans and Specifications shall be prepared by licensed engineers and registered architects and shall conform to the most current enforceable editions of: International Building Code (IBC), Americans with Disabilities Act (ADA), Energy Codes, ASHRAE, NFPA, Mechanical Codes, Plumbing Codes, Electrical Codes, local Zoning, local and Municipal Codes, all State Requirements and all other applicable laws and permit requirements. The plans will be submitted to, and permitted by, the appropriate Municipal Building Department.

Landlord will covenant that the design for the Base Building and the Project shall be in compliance with the above stated Laws, Codes and Regulations. Landlord shall provide, without cost to the Tenant, all Base Building Core and Shell improvements necessary for Tenant to comply with the applicable Laws, Codes and Regulations for the Tenant Improvements and as required by the governing authorities through the duration of the Term and applicable expansions and renewals.

The work described in these Criteria as Landlord's responsibility shall be complete including all materials, labor and installation.

### **GROSS BUILDING AREA**

268,630 Square Feet

### **NUMBER OF STORIES**

10 floors

### **BUILDING USE**

Building will be multi-use with office, lab and retail space.

### **BUILDING HEIGHT**

160' approximately

### **FLOOR TO FLOOR SLAB HEIGHT**

Lobby Floor: 18'-0"

Floors 2-10: 15'-6" FTF

### **INTERIOR FINISHED CEILING HEIGHTS**

Lab: 9'-0" finished ceiling heights

Office: 10'-0" finished ceiling heights

### **STRUCTURAL BAY SIZE**

The column bay from exterior window wall to building core wall is to be a clear span free of intermediate columns that will interfere with the tenants planning requirements.

### **OFFICE**

The minimum office column bay size shall be 30'-0" x 45'-0". This can change but may impact schedule for redesign.

### **LAB**

Columns in long direction spaced at 33' on center with traditional Edison lab bench standard module of 11'

### **BUILDING TRANSMISSION COEFFICIENTS**

Exterior Wall U Value 0.075.

Roof U Value 0.034. Glass U Value 0.21 SHGF .24 or less

### **LEED COMPLIANCE**

The design of the base building core & shell shall endeavor to achieve LEED Silver Certification as defined by the U.S. Green Building Council.

### **LOADING DOCK**

Tenants shall have access to loading docks adequate for full-size semi-trailers, trash compactor and main building mechanical/electrical areas.

Service elevator service will be provided to these spaces

### **BUILDING LOBBY**

This area will contain all visitor and tenant entrances, the building security desk, mail and parcel delivery entrance and room, passenger and service elevator access.

### **TENANT FLOORS**

These floors will contain tenant occupied spaces and floor common spaces such as mechanical rooms, electrical rooms, telephone rooms, men's & woman's toilet rooms, elevator lobby and service by both passenger and service elevators.

### **FLOOR COMPOSITION**

- Floors 1 and 2: Office and Lab lobbies, retail and core support areas. Chemical storage room (2-hour rated enclosure) adjacent to loading dock, demised for lab tenants with chain link fence (500 sf+/-) - dedicated control area for 480 gallons of flammable liquids. Main building electrical/mechanical areas and building support rooms. Service elevator service is supplied to this floor. Room for lab waste acid neutralization system.
- Floors 1 through 10: Laboratory and Office (approximately 50/50 ratio) (beyond 4 or 5 floors value drops)

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## GENERAL DESIGN CRITERIA

### SITE WORK AND UTILITIES

- Loading docks shall include dock levelers and bumpers, bollards and vehicle protection devices.
- Site features and amenities shall be provided that are consistent with Class A office buildings such as a street level entry plaza with street trees, planted beds, ambient and accent lighting, bicycle racks, seating, and trash receptacles. Materials are to be consistent with a Class A office building such as stone pavers or architectural concrete and all-season plant materials.

## STRUCTURAL DESIGN

The structural system shall consist of a steel superstructure with composite concrete slabs. Only rolled steel structural members are acceptable floor construction. Open web joists are a possible alternative for floor construction. For lab floors there shall be a 2-hour fire separation between floors.

### DESIGN LOADING

The floor shall be designed for the loads stated below in addition to the dead load of the structure plus applicable collateral load.

#### UNIFORM LIVE LOADING

- Slab on Grade: 100 PSF
- Office Floors: 50 PSF reducible (plus 15 PSF partition & collateral load)
- Corridor on Office floors: 80 PSF

- All Lobbies, Stairs, Exits: 100 PSF
- Mechanical Rooms: 150 PSF or actual equipment weight
- Roof Terraces: 100 PSF
- Lab Floors: 100 PSF

#### CONCENTRATED LOADS

Floors shall be designed to support the uniform live loads stated above or the concentrated loads stated below, whichever are the most stringent design criteria.

- Offices, Corridors, Lobbies 2,000 pounds
- Sidewalks, Vehicle Driveways 8,000 pounds
- Stair Treads 300 pounds
- Roof 250 pounds

Floors supporting heavy equipment such as high density file systems or UPS equipment shall be designed in accordance to the actual equipment weight or loading stated above, whichever is greater. Landlord shall coordinate with the Tenant on any such equipment and Tenant shall provide locations and requirements for such areas as part of the Tenant Plans. Any increase for steel as a result of this additional reinforcement shall be reasonably documented by Landlord and paid for by the Tenant.

- Superimposed Loads (included in #1 Uniform Live Loading):
- Hung ceilings: 3 PSF
- Suspended HVAC (Typical): 5 PSF
- Suspended HVAC (Above Mechanical Rooms): 15 PSF
- Partitions (as noted previously): 15 PSF

- Raised Floors: 10 PSF
- Floor Finishes: Actual Weight

### CONCRETE FLOOR FLATNESS & LEVELNESS

- Slab on Grade: Ff 30, Fl 30
- Elevated Slabs: Ff 25

### FLOOR VIBRATION

Office floor slabs shall be designed for a maximum floor system peak acceleration of 0.5% using a damping ratio of 3.0%.

### FLOOR PENETRATIONS

With adequate written notice from Tenant to the Landlord, design of the Building may be modified to accommodate penetrations of the floor structure and removal of portions of the floor structure to allow for the installation of such improvements as communicating stairways, Tenant specific shafts and vertical sleeves for electrical and data/voice risers. Tenant will pay for any incremental cost resulting from such modifications as reasonably documented by Landlord. Landlord's engineer will advise as to the permissibility of any such opening, will specify any additional reinforcing of the structure required to accommodate such opening and identify any resulting cost impact. Landlord will provide Tenant reasonable dates by which this information is to be communicated.

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## STRUCTURAL DESIGN & EXTERIOR BUILDING ENVELOPE

### CONVEYING SYSTEMS

#### PASSENGER ELEVATORS

Elevators will be traction type complete with operational systems, ADA accessible. Minimum interior dimensions for cabs will be 7'-0" W X 5'-6" D with 9'-0" from finish floor to bottom of finished ceiling. Doors will be center opening. Each cab will have dual controls. Minimum finish quality will be consistent with those finishes specified in Section 10, Interior Materials & Finishes.

A 6 car passenger bank cabs for the lab floors shall have a 3500 lb. capacity and speed of 500 fpm with destination dispatch system.

Passenger Elevators shall be designed to meet the following maximum wait times; Up Peak Average Weight Time: 23 seconds or less Two Way Average Wait Time: 31 seconds or less

#### SERVICE ELEVATOR:

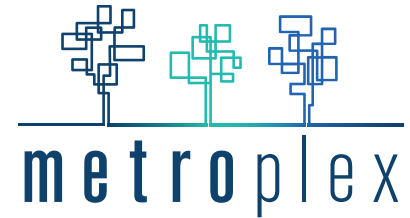
Each area of the building shall be serviced by a dedicated freight elevator. The service elevator will be traction type complete with operational systems, ADA accessible and rated at 350 fpm and 5,000 pounds capacity. Doors will be center opening. The cab will have single controls. Minimum finish quality will be consistent with the manufacturer's standard package for interior finishes and lighting. The doors and frames are to match the finishes specified for the passenger elevators.

### EXTERIOR BUILDING ENVELOPE

- The exterior walls of the Building will be constructed of materials consistent with a Class A office building with insulating glass with a high-performance low E coating. The exterior skin shall meet the requirements of ASHRAE 90.1 Energy Code, 2013 edition. The exterior wall system shall be complete with all accessories, trim and corner pieces including an integral interior sill to be provided as part of the base building window frame system. The exterior walls and roof of the building will be constructed of a curtain wall window system. The system may also include areas of spandrel and shadow box arrangements comprised of metal panels. The system will be glazed with a combination of high performance 1" thick insulated glass. Vision lites will vary depending on detail at each use.
- The glazing system shall have a minimum STC rating of 35 and a winter "U" value of no more than 0.24 with a shading co-efficiency no more than of 0.24.
- The Building's main entrance will be protected by an architectural canopy constructed from similar materials found in the building curtain wall system. Public entrance doors shall be narrow stile panels matching the building glazing system and stainless-steel revolving doors.
- Building envelope will be designed in-line with the goal of achieving LEED certification.

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## PLUMBING - CORE AND SHELL



### DESIGN CRITERIA

- A complete plumbing system properly sized for sewer, storm and domestic water will be furnished. Sewer, storm and water will be connected to the municipal system. Both sewer and water will be distributed to the toilet rooms in the core.
- Sanitary sewage from all core bathrooms and other core fixtures shall discharge by gravity to the building sewer systems.
- Floor drains shall be provided in all core bathrooms and mechanical rooms.
- Domestic water shall be provided in all core bathrooms and other core fixtures including hot water. Mixing valves shall be installed at all plumbing fixtures used for hand washing to prevent scolding; the hot water temperature shall be no greater than 110 degrees.
- Storm water from the roof shall discharge to the Building storm water system via a system of conventional roof drains, leaders and horizontal storm water piping. A means of storm water retention shall be provided.
- Secondary / emergency roof drains shall be provided separate of the main storm water system and shall discharge to grade, unless roof scuppers are used as secondary / emergency roof drains.
- Provisions for wet columns consisting of adequately sized valved cold-water outlet and capped sanitary and vent connections shall be provided. A minimum of two (2) wet columns shall be provided per tenant floor.
- Gas supply piping shall be provided for all gas fired equipment.
- All horizontal storm water piping located within the Building shall have 1-inch anti-sweat insulation to protect the ceiling below.
- All below ground sanitary, storm and vent piping shall be service weight cast iron soil pipe.
- All above ground sanitary waste and vent piping to be cast iron soil pipe. Joints on hub-less cast iron soil pipe shall be made with neoprene gaskets couplings and heavy duty stainless steel clamps. Type "DVW" copper may be used for above ground vent piping at landlord's option.
- All domestic water piping located inside of the Building above grade shall be type 'L' copper pipe with solder joints and wrought copper fittings.
- All domestic water piping shall be insulated to prevent condensation and heat loss with pipe insulation with fire and smoke spread indexes conforming to NFPA.
- The domestic water system shall provide a minimum 30 psi at each floor with velocities not exceeding eight (8) feet per second for quiet operation. Where inadequate water pressure exists a domestic booster pump shall be installed by Landlord.
- All infrastructure utility services shall have capability for shutoff at each floor. Such shutoffs shall ensure that any infrastructure improvements for other tenants does not impact Tenant, and vice versa.
- All work shall be in strict compliance with all laws, regulations and codes applying to all federal, state and local codes and any other authority having jurisdiction. Engineering design practices and field installations shall match or exceed current industry standards.

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## PLUMBING - CORE AND SHELL



### PLUMBING FIXTURES

- All plumbing fixtures, including water closets, lavatories and trim shall conform to ANSI/ASME A112 standards. Floor drains and trap primers shall be installed in all maintenance, mechanical and areas where water and/or equipment containing water are installed.
- All plumbing fixtures shall be vitreous china, commercial quality. Water closets and urinals shall be flush valve type, siphon jet, wall hung. Lavatories shall be vitreous china under-counter mounted furnished with vanity tops. All lavatory trim shall meet ADA and water conservation requirements.
- Fixture counts shall be in accordance with IBC 2015 per Pennsylvania Plumbing code
- All faucets and exposed trim shall be minimum polished chrome. All faucets and flush valves shall be sensor-operated and hard wired or have self-charging Lithium ion batteries.
- All mop sinks must be furnished with faucets that have hose threads, mop bracket and vinyl bumper guards.
- All water coolers shall be push button stainless steel split level ADA compliant.

### LEED DOMESTIC WATER FLOWS AND REQUIREMENTS

- Water closets shall be furnished with 1.28 gallons per flush, flush valves.
- Urinals shall be furnished with 0.125 gallon per flush (1 pint) flush valves.
- Lavatory sinks shall be furnished with 0.35 gallon per minute faucets. The domestic hot water branch lines shall be provided with a hot water recirculation system.



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## FIRE PROTECTION SYSTEM



### SYSTEM DESIGN CRITERIA

- The building will be protected throughout by a code compliant combination system of standpipes and automatic sprinkler systems.
- A secondary source of water shall be provided.
- Sprinkler shall be feed from low rise pump at 3001 or a standalone 3025 fire pump if services are not shared. If standalone, a fire pump room and diesel exhaust will need to be programed at 3025.
- Class 1 standpipes shall be located in egress stair towers. The sprinkler system distribution piping and heads shall be in accordance with light hazard provisions for office areas and in accordance with ordinary hazard provisions for mechanical equipment rooms and storage areas. Branch distribution piping loop(s) shall be provided at each floor.
- Recessed heads shall be provided in all common, public and tenant spaces.
- Upright heads will be provided in areas without ceilings. Further modification to be provided by Tenant to meet its revised layout requirements.

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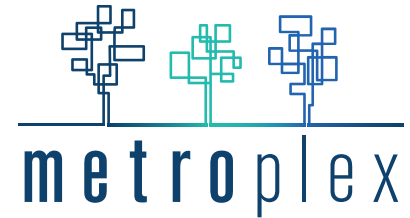
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## HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

### SYSTEM DESIGN CRITERIA

The heating, ventilating and air-conditioning (HVAC) system shall be provided to maintain conditions pursuant to codes and standards complying with the requirements of all federal, state and all local codes having jurisdiction, as well as NFPA, ASHRAE, and SMACNA. It is further defined by the following conditions:

- Maximum total lighting and office machine connected electrical load: 5 watts per usable square foot of heat gain for power and lighting, .7 watt for lighting (LEED building standard) and 3 watts for power normal office tenant use. If additional power requirements are necessary, they should be specifically noted and accommodations will be made at Tenant's expense.
- Solar and transmission loads.
- Weather Criteria – Outside Design Conditions
  - Summer (Building Load Calculation and HVAC Systems not Employing Ventilation Air Component): 92.7°F DB / 75.6°F MWB, as recommended by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), 2005 Fundamentals Handbook, 0.4% design day standards for the Philadelphia International Airport area. Number of hours this condition is exceeded is equivalent to 35 hours per year.
  - Summer (HVAC Systems Employing Ventilation Air Component): 78.3°F WB / 88.4°F
  - MDB, as recommended by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), 2005 Fundamentals

Handbook, 0.4% design day standards for the Philadelphia International Airport area. Number of hours this condition is exceeded is equivalent to 35 hours per year.

- Winter: 11.6°F DB, as recommended Philadelphia International Airport area. Number of hours this condition is exceeded is equivalent to 35 hours per year.
- Inside Design conditions are as follows:
  - Summer: 75 ±2 degrees F db/50% relative humidity ±5%
  - Winter: 72 ± 2 degrees F db
- Uncompromising HVAC systems with premium MERV 14 filtration, operating 24/7 to keep fresh air circulating
- Superior indoor air quality with up to 100% outside air

### ABOVE-STANDARD USAGE:

If Tenant Plans designate any special-purpose areas such as conference rooms, dining rooms, auditoriums or computer rooms in which population, equipment or lighting result in heating or cooling loads which will require additional chilled water, ductwork or equipment in order to meet the Building heating or cooling or ventilation criteria, such additional work and design will be at Tenant's expense except as otherwise agreed upon elsewhere in the Lease documents.

### CENTRAL EQUIPMENT:

Central equipment will have enough capacity to enable all office areas to be heated and air conditioned in

accordance with ASHRAE standards and all applicable codes as adopted by the city of x. HVAC system shall be assumed to be central dedicated outside air system (DOAS) with risers for supply and exhaust air. All other HVAC systems that achieve or exceed comparable performance, including but not limited to space temperature and humidity control, acoustical performance, energy efficiency, and maintenance capabilities shall be acceptable.

- DOAS units shall be provided with the following:
  - Variable frequency drives (VFD) on supply and relief fans
  - MERV-13 final filters
  - Cooling coils with ss casings
  - Double wall construction
  - Low-leakage dampers
  - Smoke detectors
  - Heat recovery wheels with bypass dampers
- DOAS system shall have the capability to provide at least .2 CFM per sq. ft. for office areas and 1.5 CFM per sq. ft. for lab areas up to 50% off total usable area. Supply air to each floor at a temperature of not greater than 63 °F dry bulb and 42 grains/lb.
- The building's systems shall employ energy efficiency standards in order to qualify for Energy Star – Energy Performance Rating of 75 or better.
- Energy recovery DOAS units shall supply all outside air to the office floors and lab/office floors. These units shall have energy recover wheels MERVE 8 pre- filters and MERVE 13 final filters

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## HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

### SYSTEM LAYOUT

Landlord shall provide all required central equipment. Base building main HVAC system shall be DOAS to serve both core and tenant spaces. Landlord's responsibility shall terminate at the end of the main vertical core supply. Landlord shall also provide installation of medium pressure ductwork for DOAS system on each office floor. Landlord shall also provide 4 DOAS boxes for temporary conditioning and use in tenant fit outs. Provided with a DDC controller.

- General DOAS Box Zoning Requirements:  
1 DOAS box per 1,000 square feet of occupiable space, 60% of which shall be have heating coils and 40% shall be chilled water only.

### ACOUSTICAL CRITERIA

- Central HVAC systems shall be adequately attenuated to achieve the following without extraordinary expenditure by Tenant for ductwork sound attenuation work:
  - Private Offices, Conference and Meeting Rooms - NC35.
  - Open Offices, Lobby and Common Spaces - NC40.

### BUILDING AUTOMATION SYSTEM (BAS)

- Building controls shall be a complete DDC system for all systems serving the building, with BACnet compatibility with web access capabilities. Systems shall have an open protocol compatible with power, mechanical, security, lighting and elevator systems.

- The control system shall be interlocked to allow trending of equipment and demand of utility services. A backbone shall be provided to meet tenant requirements and electronic metering devices at each floor.
- Landlord base building control system shall provide for the ability to operate 1/6 of the HVAC systems serving each tenant floor at any single point in time. During any period when the Building may be in setback mode, the control system will provide to the Tenant the ability to operate 1/6 of the tenant floor from a single point located within the premises and allowing the control of the temperature set point within any single zone in that area. Tenant work shall include all controls necessary to accomplish the downstream control.
- The BAS shall consist of the following subsystem management capabilities:
  - HVAC System - Monitor cooling and heating equipment, ventilation equipment, air conditioning equipment and measure/monitor environmental conditions.
  - Power distribution System - Monitor and measure all base building equipment, including alarms on emergency conditions. (Please clarify)
  - Monitor and control internal common area light system and Building exterior and site lighting systems.
  - BAS shall monitor equipment associated with fire alarm equipment. Note: BAS can't by code effectively shut-down fire alarm systems.

### STAIR TOWER PRESSURIZATION

Stair tower pressurization and elevator pressurization shall be provided with variable speed drive fans.

### MISCELLANEOUS

- All filters will be replaced immediately prior to tenant improvement substantial completion.
- Clean and test all HVAC systems prior to occupancy by Tenant.
- Pressure test duct work and performance test air handling system prior to Tenant fit out. Landlord shall provide Tenant with results of all testing.

### CHILLED & CONDENSER WATER SYSTEM

- Chilled water will be generated by a chiller plant. The three chillers will be centrifugal type approximately 325 tons each. The chiller refrigerant will be selected such that it meets the ozone depletion requirements of LEED CS. Chillers will be ultra-high efficiency to help meet the current LEED CS goals for energy points. The total peak chiller plant load is anticipated to be -1,400 tons. One or more of the chillers shall be feed by the backup power system. A load limit will be sent to chillers from the BAS when on EM power to limit the load to match generator capacity. One or more of the chillers will be optimized for lowest kw per ton @ 57 LWT and 66 EWT and the other one or more will be optimized for 42 LWT and 56 EWT. All three shall have stable performance at both selections.

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## HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

- Cooling towers will be located at the roof level and will be sized based on 78 deg. F. WB, 83 F leaving water with a 12 F delta at full load. Two of the four cells will be on the backup power system. Each cell shall be selected at x gpm at full load and have turndown to minimum flow of no more than 20%. Each cell shall have a ABB VFD (actual motor at full load shall not exceed x bhp). Cooling towers shall be 304 stainless steel. A side stream packaged filter will be provided in the cooling tower loop.
- High Temp Chilled water (for DOAS boxes) at 57 F leaving water will be circulated throughout the building via variable speed pumps with speed responding to system differential pressure. Two of the three chilled water pumps shall be on the tenant backup power system.
- Chiller condenser water will be circulated via variable speed pumps located at the Roof level mechanical room. Two of the three condenser pumps shall be on the backup power system
- Chilled water will be metered at the plant, at each office and lab tenant floor and each ventilation unit.

## HEATING HOT WATER SYSTEMS

Heating hot water for the Office and Lab supplied utilizing gas fired hot water boiler at Roof Mechanical level. Variable speed pumps will circulate hot water.

## COMMON AREA HVAC

- Common area spaces at the lower levels will be conditioned with fan coils served off the chilled and hot water loop.
- Ducted electric unit heaters will be provided at entrances.
- Electrical substation rooms will be cooled utilizing chilled water fan coil units.

## TOILET EXHAUST SYSTEMS

- The toilet rooms and miscellaneous spaces will be exhausted by central exhaust fans within the heat recovery ventilation units. Separate risers and fans will be provided for janitor's closets in areas where general exhaust does not run 24/7.
- At each office floor, a VAV box will be provided in order to allow for after-hour operation of individual groups of floors. Fire/smoke dampers will be provided at each shaft penetration.

## SMOKE CONTROL SYSTEMS

- The stair towers will be pressurized by fans as required by code. The pressurization fans will be equipped with variable speed drives to ensure proper pressurization control. Relief dampers will be provided.
- Elevator shafts will be handled with smoke doors if required by code.

## AUTOMATIC TEMPERATURE CONTROL SYSTEMS

The entire building will be equipped with a direct digital building automation system to control and monitor all building functions. The control system will also monitor energy usage and incorporate demand control strategies. The system will be expandable to incorporate equipment added as part of tenant improvement work. The system will be web-based.

## FUEL SYSTEMS

A fuel oil pumping station will be provided at the loading dock and will transfer oil to the emergency generator day tank(s).

# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE

## ELECTRIC DESIGN CRITERIA - CORE AND SHELL



### MAIN SERVICE (ENTIRE BUILDING)

Power to the Building will be via high-tension service provided in a single feed configuration from one substation. PECO will supply this service. Primary electric service feeds will be provided via duct banks to the Building via 13.2kV circuits. Landlord shall provide and maintain this equipment. And second feed from a separate substation may be added for additional cost.

- The primary duct banks shall be separated and shall not cross at any point.
- Automatic 15 kv primary transfer equipment will be provided with capability of closed transition from two to one or back to two lines severing the building.
- Base building shall have sufficient capacity to accommodate total power of 15 watts/sf via double-ended 480 volt substations located at the mid and high mechanical levels.
- Landlord shall provide a pathway in the form of a shaft or sleeves in the floor electrical rooms for future feeders from the main incoming service to the tenant floors.

### GENERAL OFFICE FLOOR DISTRIBUTION

General office floor distribution will be derived from a vertical bus duct system. Electrical riser capacity available to the Tenant will be 5 watts (demand) per usable s.f. including .7 watts per usable s.f. for lighting and 3 watts per usable s.f. for equipment power in addition to HVAC building loads. Additional service and distribution capacity can be made available. Two (2) electrical closets and one (1) telephone closet will be provided on each floor.

All tenant transformers, panels and circuit breakers are part of tenant fit out. Each floor shall have one 600 amp bus switch capable of being fused at 400 or 600 amps.

### EMERGENCY GENERATORS

Base building emergency power supply system as defined by the NEC will be provided through landlord provided emergency generators. The generator is to service all building (office, retail, lab and residential) life safety systems (stair and exit lighting, elevator, smoke exhaust, stairwell pressurization fans, fire alarm system, etc.) in the event of loss of normal power. Fire Pumps will be diesel powered. All work will be installed as per the National Electric Code EPSS. Stair exit and egress lighting will include local battery backup. Landlord shall provide one (1) 20 amp 277v circuits per floor derived from Landlord's emergency power system for the purpose of powering tenant emergency lighting loads.

Landlord shall provide 4 MVA of emergency generator capacity for both the lab and office building for tenant back up power requirements and building systems back up. Up to 5 watts per usable square feet will be provided for Lab Tenant use via emergency power bus risers with panels on every other lab floor. Tenant connection to these EM panels are part of Tenant improvements and will be sub metered in accordance with Landlord's sub metering specifications. Up to 1 watt psf of non-life safety emergency generator capacity will be available on office and retail floors for tenant supplemental IT AC chilled water units, small data center UPS, walk in freezers and other critical loads. Tenant's that elect to connect approved load to the backup power system must enter agree to pay their proportional amount of the system cost.

# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE

## ELECTRIC DESIGN CRITERIA - CORE AND SHELL



### **FIRE ALARM SYSTEM**

Landlord will provide an addressable fire alarm system including a central command center, pull stations, voice communication systems, area and duct detectors (for base building HVAC units larger than 2000 cfm), sprinkler flow switches and supervisory switches, speakers and strobes at locations and quantities as required by code in core areas of the building with capacity to install additional devices as part of Tenant improvements. Fire command center will be located in main lobby. The tenant shall be able to tie into the system on each floor for required devices within their respective spaces.

Fire Alarm panel as provided by Landlord shall be capable of accommodating future Tenant work. All wiring and tie-in to base building Fire Alarm panel associated with specific Tenant Improvements to be completed by Tenant as part of its Tenant Work.

### **METERING**

Metering of tenant power shall be provided at each vertical riser connection via a submeter capable of being monitored and read via a central computer system or the Building Automation System. Tenant shall be charged the actual Utility rate paid by the owner for electricity without markup net of overhead cost.

### **LIGHTNING PROTECTION SYSTEM**

Landlord shall provide a UL master label lightning protection system in compliance with NFPA 780a for the building, including surge protection on the incoming service.

### **LIGHTING CONTROLS**

Landlord shall provide a relay-based lighting control system for control of base building and exterior lighting with inputs from low voltage switches in the space, occupancy sensors in base building spaces, photocells, and an internal time clock for each relay. The lighting control relay panels shall be located on each floor for use by the Tenants. Lighting circuits from tenant panels will be capable of utilizing the base building lighting control panels for local control and after-hours shutdown based on time clock setting. The lighting control system shall be capable of being connected to the BAS system to coordinate control scheme with mechanical systems. Any lighting control systems for tenant lighting will be part of TI costs.

# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE



## HVAC, PLUMBING, ELECTRICAL & FIRE PROTECTION (MEFPF)

### THE MEP SYSTEM WILL BE DESIGNED BASED ON THE FOLLOWING CRITERIA

- Central plant system for office and Lab space shall be sized with capacities sized to serve lab floors with 1.5 cfm per usable square foot of 100% outside air for 50% of the usable space on lab floors demised as lab only and .2 cfm of outside makeup air for the other 50% of the space demised as office only on the lab floors. Office floors shall have DOAS sized for .2 cfm per usable square foot.
- One or more of the chillers shall be being served by generator power, although controls may limit only one to a certain load in operation when on emergency power.
- Chilled water loop from the central plant extending within shaft space through the office floors to the cooling towers on the high roof.
- Upper rooftop lab exhaust “high plume” (e.g., Strobic or Greenheck) fan systems – with energy recovery at the mechanical rooms Fans will be served with backup generator power.
- General lab exhaust through DOAS HRU at mechanical room. Fans will be served with backup generator power.
- Supply and general exhaust duct risers to be located in the core. 100% outside air supply from the mid-level mechanical level via DOAS AHUs will require 450 square feet of free area intake louver. Hazardous lab exhaust shafts shall be ducted to roof with heat recovery coils.
- East and west shaft with both hazard exhaust and general lab exhaust to be adjacent to or incorporated

in the core enclosing lab exhaust duct risers extending to the lab exhaust system on the roof or mid-level HRU. Shafts to hug the core to allow successively larger shafts ascending from floor to floor at Lab levels, Lab hazard exhausts ducts to extend through the office floors in rated shaft to the roof sized for 47kcfm @ 1,300fpm (~40 square feet).

- Hot water and chilled water risers, valved and capped for tenant use on each floor.
- Upturned sprinkler heads throughout unfinished tenant space.
- Two lab waste stacks for tenant access on each lab floor.
- Tempered water system for lab emergency eye wash and showers.
- Back flow preventers at domestic water entrance.
- Potable/non-potable cold water risers for tenant connection.
- PH Neutralization system for lab waste located in basement.
- DDC Controls, Building Management System.
- 10 watts per usable square foot – two 600 amp 480v/3ph panels per floor. More can be provided on one floor if less is provided on another through diversity in the bus riser.
- Standby Power Generation - 5 watts per usable SF based on the 50% lab use on lab floors. Four 200 amp 4 wire 480v back bus discount panels on every Lab/Office floor. More can be provided on one floor if less is provided on another through diversity in the bus riser.

- Dedicated space on mechanical floor for tenant “off-floor” lab specialty equipment – e.g., RODI water, vacuum, compressed air, etc.
- Dedicated rooftop space for future lab tenant specialty systems – e.g., auxiliary cooling, satellite dish, etc.
- A glycol heat recovery loop system shall be piped to recovery heat in HRU coils in Lab exhaust air ducts at Pent House or Ground Floor mechanical rooms and Coils in 100% outside air units also at Pent House or Ground Floor mechanical level.

### SUPPORT SPACES

- The main entrance lobby and amenities spaces will be conditioned with horizontal heat pumps. Ventilation air for the all spaces will be thru central outside air ductwork.
- Local exhaust from the lobby level will be provided from toilet rooms, janitor’s closets and other spaces requiring same, via vertical ducts through the building.
- Elevator lobbies will be conditioned via VAV terminal boxes.

# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE



## TELECOMMUNICATIONS DEMARC

- Two (2) diverse points of provider service entrance will be accommodated.
- Minimum of two 4x8' plywood panels will be provided for provider equipment.
- Each plywood panel will have a quad outlet located on building emergency power located nearby.
- 4 Post racks will be provided for building riser cabling. Additional rack(s) will be provided for tenant fiber, tenant copper, and provider equipment.
- Each rack will have an electric box capable of handling a L6-30R receptacle located on the ladder rack above.
- A minimum of four (4), four inch, conduits originating within the demarc room and extending to the lowest level telecommunication riser location.
- Ladder rack will be provided above the racks and connecting to any walls with plywood.

## DISTRIBUTION ANTENNA SYSTEM (DAS)

A DAS provider room will be provided, capable of supporting Cellular Telephones. A 4" riser sleeve in telcom rooms dedicated to DAS.

## TELECOMMUNICATIONS RISERS AND CABLING

- A telecommunication riser location will be provided on each floor, able to support no longer than a 250' cable length to any location on the floor. If cable length will be exceeded additional closet will be required.
- Riser location can share with other base building rooms as long as the room is secured and provides enough room for a wall mounted rack and two separate 4'x4' wall locations for security panels and provider equipment to be mounted.
- A 4x4' plywood panel will be provided for security equipment and a 4x4' panel will be provided for provider equipment.
- Four (4) four inch sleeves shall be installed to provide paths to each riser closet above. These conduit sleeves shall be rigid steel and extend 4" above and below the floors.
- A wall mount rack will be provided in each riser closet, sized to where no more than 50% is utilized after all base building fiber enclosures, patch panels and UPS are installed.
- Fiber riser cabling will consist of minimum 12 strands of Single Mode OS2 fiber, LC terminated into a rack mount enclosure at the top of the rack.
- Copper riser cabling will be 2x Cat6A cables will be run from the first two ports on the patch panel to the building demarc room.

- Cat6A cabling will be used to feed all core building technology (e.g. BAS, APs, Security, AORs, Lighting controls, etc.) from the riser closet on each floor to devices on that floor. All cabling will terminate into a patch panel in the riser closets and a female jack on the equipment side.
- A rack mount UPS will be provided at the bottom of each rack. Minimum size of the UPS will be 15 watts per copper port available on the patch panels.
- Circuit feeding the rack will be on building emergency power.
- Building owner will provide switches to be installed in demarc and riser closets by telecommunications vendor.

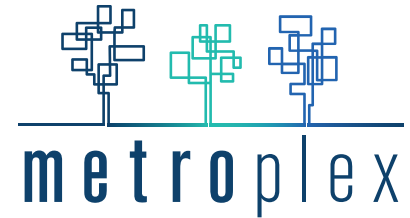
## PUBLIC WIRELESS (WI-FI)

- Building owner will provide access points to be installed in common areas by telecommunications vendor.
- Access point locations will cover building lobbies and any common space that may be used for gathering or waiting.
- Additional access point locations to be provided in engineering and housekeeping locations.
- Access points may be concealed, but must have an available way to replace or troubleshoot equipment in the future.



# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE

## INTERIOR MATERIALS AND FINISHES



### MAIN ENTRANCE LOBBY

- Main lobby will be a multiple story space with upgraded finishes and lighting. Examples of acceptable finishes may be polished, honed and/or flamed stone, wood veneers, stainless steel or glass.
- The ceiling is to be uninterrupted by normal building services such as diffusers and return air grilles. Devices for building services are to be custom designed and concealed from public view.
- Lighting is to consist of custom design fixtures that provide ambient and accent illumination.

### BUILDING CORE - GENERAL

All Doors should be 9'-0" solid core wood with hollow metal frames with applicable fire resistive ratings. ADA compliant commercial grade cylindrical hardware required for all base building doors.

Mechanical, Electrical & Tele-data Rooms require partitions with a STC of 50.

Base Building Toilet Room partitions to be constructed to achieve a STC of 55. Water resistant drywall is required at "wet" core areas.

### ELEVATOR LOBBIES

- On the Tenant floors which are fully occupied by Tenant, the elevator lobbies are to be delivered to the Tenant in a semi-finished "shell" condition ready to receive Tenant specified finishes. The floor shall be concrete finished suitable for installation of Tenant finish. Walls shall be drywall, taped and spackled ready to receive Tenant finishes. There is to be no ceiling. Landlord shall coordinate the ability of the elevator call buttons, call signals, elevator door

frames and other door frames to be removed and remounted after installation of the Tenant specified finishes. Distribution of HVAC and electric are to be coordinated by the Landlord to achieve the Tenant design.

- Elevator lobbies on multi-tenant floors that will be occupied by Tenant are to be renovated and refurbished by the Landlord with finishes and lighting to achieve the quality and "look" similar to the full floors occupied by this Tenant.

### BUILDING CORE RESTROOMS

- Individual compartment - European style restrooms are to be provided with anti-microbial type drywall partitions between each water closet. Solid core hardwood louvered doors with ADA compliant hardware will provide access to each stall.
- Large scale (12"x 24" or larger) Porcelain tile flooring and base. Wet walls to receive larger scale ceramic tile (8"x12" or larger) to finished ceiling. Adjacent walls (to wet walls) to receive ceramic wall tile to 4'-0" above finish floor.
- Type 11 anti-microbial Vinyl wall covering will be installed on all walls not covered by ceramic/porcelain tile.
- Drywall soffits and a perimeter drywall border are to surround an acoustic tile ceiling.
- Lavatories are to be installed in each unisex compartments.
- All toilet accessories are to be stainless steel and to include but not be limited to motorized hands free paper towel dispensers plus toilet paper dispensers, receptacles, handicap accessibility/support mechanisms.

- Provide (2) convenience outlets above the granite counter tops in each restroom.
- Supply air outlets and exhaust are to be provided to each toilet room in accordance with code.
- Floor drains will be provided in the toilet rooms.
- LED Down lighting is to be installed above the vanity mirrors with light sconces installed at the ends of each lavatory countertop. Recessed down lights are to be installed within each toilet compartment and as supplemental lighting in the general restroom area.
- Individual decorative "picture framed" mirrors will be provided above each lavatory.

### MECHANICAL/TELECOMMUNICATIONS/ELECTRICAL ROOMS

- Finishes will be building standard. HVAC, electrical and lighting will be building standard.
- Sealed concrete floor.
- No ceiling.
- Painted walls on CMU or drywall walls (properly rated).
- Supply air outlets, adequate ventilation and exhaust and branch ductwork for electrical rooms, transfer openings for telecommunications rooms and duct fire dampers, as required, by Landlord.
- Floor drains and overflow curbs will be provided in mechanical rooms.
- Landlord to provide floor openings and framing for Tenant specified sleeves for electrical and data/voice sleeves.

# metroplex TWO LIFE SCIENCE/R&D/LAB/OFFICE

## INTERIOR MATERIALS AND FINISHES

### JANITOR CLOSETS

FRP up 5' on walls with mop sinks, sealed or VCT floors, no ceilings. LED shop light.

### STAIRWELLS

Stairs serving the Tenant floors are to receive upgraded finishes and lighting to function as communicating stairs for the Tenant. Finishes are to be concrete landings and risers pans, painted drywall, painted handrails and code required LED lighting.

### TENANT AREAS

The Tenant premises shall be delivered as described below:

- Base Building systems such as HVAC, electrical, plumbing and fire protection shall be installed to allow for installation of a finished ceiling at the previously specified heights throughout the Tenant space with adequate clearance above for installation of all Tenant HVAC distribution, HVAC boxes, and lighting fixtures at any location.
- Base Building architect to design & coordinate window treatment standards for use in tenant improvements.
- Landlord to provide drywall, framing and insulation above perimeter exterior windows and below perimeter window sill. Drywall to be taped, spackled and prepped for painting. Landlord to ensure that there is an appropriate means of receiving the ceiling wall angle above the window head. Fastening the wall angle into the window head is not acceptable.
- Landlord shall provide Tenant perimeter window sill in a material similar in finish and profile to base building exterior wall system and/ or exterior windows. Depth of sill to match depth of perimeter drywall.

- Landlord to provide all core walls facing the Tenant space finished with drywall, taped and spackled and ready to receive the tenant finish.

## SECURITY

### TENANT

- Tenant suite entrances will be part of Tenant Improvement Allowance.
- Card readers to be provided in each Elevator cab and stair doors entering the Tenant space.
- Central computer or dedicated tie to 24-hour service.

### BUILDING SECURITY ACCESS CONTROL

- Tenant suite entrances will be part of Tenant Improvement Allowance.
- Card readers to be provided in each Elevator cab and stair doors entering the Tenant space.
- Card readers will support both 125 kHz and 13.56 MHz technologies.
- Security panels will be connected via IP over Ethernet backbone.
- Security system must be manageable via a standard website and meet the Brandywine Building Technology policy requirements for security and updates.
- Central computer or dedicated tie to 24-hour service.
- System must support being tied to a central monitoring system on 24-hour basis and will also be

monitored by a central security station to be determined.

- All outside entrances to the Building shall not be accessible by the general public. If applicable, the dock master's office and building security will control the service elevator, loading dock and delivery access points.

### VIDEO SURVEILLANCE

- Cameras will all be IP based, of sufficient resolution to identify an individual in covered area.
- Video system must be manageable via a standard website and meet the Brandywine Building Technology policy requirements for security and updates.
- NVR system will have disk redundancy
- System will be able to integrate with Access Control system for a common view and events.
- System will be tied to a central monitoring system on 24-hour basis and will also be monitored by a central security station to be determined.
- All outside entrances to the building shall not be accessible by the general public. The dock master's office and building security will control the service elevator, loading dock and delivery access points.
- The security desk shall be located in the Building lobby. Access to the elevator core shall be accessible only by passing the security console/desk area. A minimum of two (2) security guards will staff the building 24/7.
- Base building security system will have the capability to be expand for the Tenant provided security system. All Tenant card reader security points to be monitored by the Base Building Security System.



# metroplex TWO

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## SIGNAGE

Landlord will develop the complete Directional, Identification and Regulatory signage package for the building. Landlord will present the signage package to the Tenant and consider their comments during the full implementation of the signage program. Tenant to have reasonable approval rights.

## RETAIL SPACE

- Electrical Service for Retail 1 - 400 amp 480v / 277v feeder, 2 - 20 amp 277 volt emergency lighting circuit.
- Plumbing - 1 1/2" sub-metered water service, waste connections for kitchen and restrooms.
- Store fronts and entry doors.
- Potable Hot water generation from high temp heating hot water closed loop exchangers - metered.
- Corridor access to service elevator.
- Gas service shall be 1" capped stubbed into space, sub metered.

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