MECHANICAL AND PLUMBING BASIS OF DESIGN FOR BRIDGING DOCUMENT

1. MECHANICAL

1.1. Goal:

A. Provide design, engineering, installation, and start-up, testing, adjusting, balancing, and commissioning of the complete, operational Mechanical systems for the entire project.

B. Applicable Mechanical design to comply with the LEED sustainable built environment criteria for New Construction, with the goal to achieve USGBC-LEED Silver (50-59 points for all applicable disciplines) certification or better.

C. Participate in the Statewide Saving By Design Energy Efficiency programs for new construction sponsored by Southern California Edison (SCE) or Southern California Gas Company (SoCalGas).

1.2. Design Conditions:

A. Heat gains and losses to the exterior will be calculated using ASHRAE outdoor design conditions at frequency levels of 0.5% for summer dry bulb and wet bulb temperature and 0.2% for winter dry-bulb temperature. The HVAC System design is based on the following climatic conditions:

<table>
<thead>
<tr>
<th>Outdoor Temperatures: (Victorville, CA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer: 101ºF dry bulb</td>
</tr>
<tr>
<td>Winter: 24ºF dry bulb</td>
</tr>
</tbody>
</table>

B. Space Conditions

<table>
<thead>
<tr>
<th>Indoor Design Temperatures: (General)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer: 74ºF +/- 2ºF</td>
</tr>
<tr>
<td>Winter: 70ºF +/- 2ºF</td>
</tr>
</tbody>
</table>

1.3. Lighting and Equipment Loads: In general, the following lighting and equipment loads are included in the design of the air conditioning system:

A. General Lights: maximum 1.2 watts/sq. ft.; verify with electrical engineer.

B. Equipment: verify the actual heating load with the manufactures.

1.4. Ventilation:

A. Outside air ventilation rates for outdoor air intake flow rate for all rooms and occupied spaces will be designed according to 2010 CMC, Chapter 4, Section 403.0 through 403.6 and Table 4-1 to Table 4-3.
B. Exhaust airflow rate for occupancy space will be designed according to 2010 CMC, Chapter 4, Section 403.7 and Table 4-4.

C. Exhaust fans serving Anatomy Laboratory, Cadaver Room and Lab areas shall be provided with a Variable Frequency Drive (VFD) and track with supply air terminal unit. Exhaust rate shall be maintained at an offset to maintain 0.05-in water gauge negative pressure. Exhaust fans shall be supported by spring isolators on roof structure on Mechanical Penthouse. These fans shall be provided with spark-proof construction and explosion proof motor.

D. Exhaust fan manufacturer shall be Loren Cook Company, Greenheck, and Twin City.

1.5. Noise Control:

A. Rotating equipment will be provided with flexible duct and flexible hose connections.

B. Equipment shall be provided with vibration isolation as noted in this document.

C. Supply and Return Ductwork from Air Handling Units shall be provided with minimum 20'-0” of internal acoustical lining.

D. Connections to ceiling diffusers and grilles shall be acoustical flexible duct between the branch duct and supply diffusers.

1.6. Chilled Water System:

A. The chilled water source for new Building’s cooling requirement will be supplied from the existing Central Cooling Plant by underground trench between the existing building and new building. The new chilled water piping will rise to the Mechanical Penthouse in the mechanical chase by the Main Entrance Foyer.


B. Building Chilled water pumping system shall be variable primary type.

1. Two building pumps shall be provided to circulate chilled water in the Building. One pump shall be used as a standby. The chilled water pumps shall be located on the Mechanical Penthouse.

2. The chilled water pumps shall be located in the Mechanical Penthouse above the Main Entrance Foyer.

3. Pumps shall be provided with a neoprene pad below the pump stand for vibration isolation.

4. Pumps shall be base mounted end-suction type.
5. Chilled Water Supply temperature is 44ºF from the Central Cooling Plant.

6. Chilled Water Return water temperature is 54 ºF back to Central Cooling Plant.

C. Chilled Water Piping:

1. Underground: Prefabricated pipes with a non-corrosive casing, the service pipe shall be PVC pipe with insulation and PVC jacket.

2. Above Ground: Black Steel Schedule 40 pipe or ASTM B88 Type L Copper.

3. Insulation: 2-inch thick glass fiber. Insulated piping located in areas exposed to weather shall be furnished with field applied aluminum jacket.

1.7. Heating Hot Water System:

A. The heating hot water source for new Building’s heating requirement shall be supplied by two gas-fired packaged Low NOx boilers.

1. The boilers shall be located in the Mechanical Penthouse above the Main Entrance Foyer.

2. Boiler shall be fully modulating condensing boiler with minimum thermal efficiency of 95%.

3. Boiler shall be provided with neoprene pad below elements of the boiler in contact with the floor to provide vibration isolation from the building structure.

4. Boiler shall be manufacturer by Patterson-Kelly or Ajax Boiler.

B. Building Heating Hot Water pumping system shall be distributed through a primary and secondary pumping system.

1. A primary circulating pump shall be provided for the boiler. Pump shall be inline type.

2. Two secondary pumps with variable frequency drives shall be provided to deliver hot water to the building. One pump shall operate at normal operation and the other pump shall be used as a standby pump. These two pumps shall rotate the operation by Energy Management System (EMS).

3. The pumps shall be located in the Mechanical Penthouse above the Main Entrance Foyer.

4. Pumps shall be provided with a neoprene pad below the pump stand for vibration isolation.
5. Pumps shall be base mounted end-suction type.

C. Heating Hot Water Piping:

1. Above Ground: Black Steel Schedule 40 pipe or ASTM B88 Type L Copper.

2. Insulation: 2-inch thick glass fiber. Insulated piping located in areas exposed to weather shall be furnished with field applied aluminum jacket.

1.8. Air Side Systems:

A. The building air conditioning systems shall be provided by (5) five central air handling units located at the Mechanical Penthouse Level of the Building

B. AHU-1, AHU-2 & AH-3 shall be air handling unit with return fan. These units will be used to provide supply and return air to general area.

C. AHU-4 & AHU-5 shall be air handling unit with no return fan. These two units are 100% outside air unit. AHU-4 shall be used to serve Chemistry Laboratory areas. AHU-5 shall be used to serve Anatomy Laboratory, Anatomy/Physiology Lab.

D. AHU-1 shall be located in the Mechanical Penthouse. This unit shall be used to serve Medical Equipment Storage, Nursing Fundamental Lab, Faculty Office and Digital Physical Science Lab. These areas will be served by an under floor system. Supply air ducts with control damper will be running through the duct shafts to below raise floor spaces. These air ducts will provide all the supply air for the air plenum. Supply air diffuser will be located on the raised floor plenum. Fan-powered terminal units with hot water reheat coil will be placed in the raised plenum for heating during cold season. The supply air temperature of the under floor system will be 62°F. The return air of these spaces will be through the return ductwork in the ceiling space.

E. AHU-2 shall be located in the Mechanical Penthouse. This unit shall be used to serve Digital Nursing Lab, Simulation Center Nurse Station and the Lab. These areas will be served by an under floor system. Supply air ducts with control damper will be running through the duct shafts to below raise floor spaces. These air ducts will provide all the supply air for the air plenum. Supply air diffuser will be located on the raised floor plenum. Fan-powered terminal units with hot water reheat coil will be placed in the raised plenum for heating during cold season. The supply air temperature of the under floor system will be 62°F. The return air of these spaces will be through the return ductwork in the ceiling space.

F. AHU-3 shall be located in the Mechanical Penthouse. This unit will be used to serve the Corridor area and the Administrative Area. The supply and return duct will be running in the ceiling spaces. Variable air volume terminal units with hot water coils will be provided for heating.
G. AHU-4 shall be located in the Mechanical Penthouse. This unit shall be used to serve Toilets, Electrical Room, General Chemistry Lab and Balance Room. Constant volume terminal units shall be provided for the Toilet and Electric Room. Variable air volume terminal air units shall be provided for the Chemistry Lab. General exhaust shall be provided for the Toilet and electric room. Two special fume hood exhaust fan with variable frequency drives shall be provided for the hoods. Variable air volume control valves shall be provided in the fume hood exhaust for the variable air volume control. Wall switches shall be provide on the wall for the fume hood exhaust fans. General exhaust shall be provided for the Chemistry Lab exhaust when Fume Hoods are not in operation. Balance Room shall be similar to Chemistry Lab.

H. AHU-5 shall be located in the Mechanical Penthouse. This unit shall be used to serve Anatomy Lab and Anatomy/Physiology Lab. Variable air volume terminal unit with hot water reheat coil shall be provided for the Anatomy Lab. Exhaust air control valve shall be provided for exhaust. Underground exhaust duct shall be provided in the lab for student islands and instructor’s islands’ exhaust. Utility fume hood exhaust fans with stack shall be used for exhaust. Anatomy/Physiology lab shall be similar to Anatomy Lab.

I. Cadaver Room and Cat Storage Room shall be provided with low temperature fan coil units and humidity control. These two rooms shall be provided with separate low exhaust and outside air for ventilation. Utility fume hood exhaust fans with stack shall be used for exhaust.

J. The Air Handling Unit shall be configured as follows:

1. Draw-through configuration with supply fan, return fan. Variable frequency drives for both supply, return fans shall provide air volume control. Additional return air-bypass section with bypass damper and filters for underfloor units.

2. Pre-Heat Hot Water Coil and Chilled Water Cooling Coil.

3. Interior vibration isolation shall be used for the fans and motors.

4. Fan cabinet shall have double wall construction with 2" liner; Fan sections’ liner shall be perforated type with 2" liner for sound attenuation

5. A 100% outside air economizer shall be provided according to Title 24 requirement;

6. Filtration of unit shall consist of followings:

   a. After Outside Air Intake Cabinet and before Pre-Heat Hot Water Coil: MERV-8 pre-filters, activated carbon filters, bipolar ionization and MERV-14 final filters.

7. Air Handling Units shall be manufactured by Energy Labs, York "Pace" or Temtrol.

K. Individual Zones:

1. VAV terminal with hot water reheat coil shall be provided for each zone to control the individual space temperature.

2. Modulating control dampers shall be provided in the branch ducts for larger zones to control the space temperature.

L. Fume Hoods:

1. Classrooms with fume hoods shall each have dedicated high plume laboratory exhaust fan.

2. Fume hood shall be the variable air volume type with the ability to shut-off airflow through the hoods when not in use.

3. Airflow control valve with readout capability or a DDC CV/VAV terminal unit in each branch exhaust duct.

M. Air Distribution:

1. Over head supply diffusers and return/exhaust grilles mounted in the ceiling. Supply diffusers shall be modular core with perforated face. Return/exhaust grilles shall be perforated face with rectangular neck.

2. Under floor system supply diffusers at the raised floor and return/exhaust grilles mounted in the ceiling. Supply diffusers shall be fixed linear bar diffuser for raised floor application. The under floor supply system shall be provided by AHU-1 & AHU-2. The return of these area shall be in the ceiling

3. Exposed ceiling spaces shall have supply and return registers on the ductwork.

4. Diffuser velocities shall not exceed the following criteria:

<table>
<thead>
<tr>
<th>Supply Diffuser:</th>
<th>450 FPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Grille:</td>
<td>450 FPM</td>
</tr>
</tbody>
</table>

5. Individual Zones: pressure independent variable air volume air terminals with hot water reheat coil shall be used to provide temperature control zone based on exterior exposure or space usage.
6. Air distribution shall be manufactured by Kruger, Anemostat, Price or Titus.

N. Dedicated Cooling Systems

1. The Main Comm. Rooms, IT Rooms and the IDF Rooms shall be served by above ceiling suspended DX air conditioning systems.

2. Cadaver Room and Cat Storage Room: These rooms shall be provided with low temperature cooling system with humidity control.

O. Duct Systems:

1. Duct velocities shall not exceed the following to minimize sound generation:

<table>
<thead>
<tr>
<th>Type</th>
<th>Maximum Velocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains</td>
<td>1,500 FPM</td>
</tr>
<tr>
<td>Branches</td>
<td>1,000 FPM</td>
</tr>
</tbody>
</table>

2. Ducted supply, return and exhaust air. Ductwork shall be minimum 24 gauge galvanized sheet metal, insulated per California Title 24 requirements.

3. Exhaust ductwork in toilet rooms shall be aluminum for a distance of 5'-0" from the exhaust grille.

4. Exhaust ductwork that serves the fume hoods, Anatomy Lab, Anatomy/Physical Lab, Cadaver Room and Cat Storage Room shall be stainless steel welded wrapped with fire rated enclosure or fire wrap from the hood to the exterior.

5. Exhaust air from Hood shall be discharged from the highest level of the building. Provide a discharge stack at least 10 feet tall. The discharge velocity at the nozzle shall be 3,000 fpm.

6. Ducts shall be sized with low velocities, long radius elbows and internal lining to reduce the transmitted noise.

1.9. Automatic Controls:

A. Complete system of automatic temperature controls shall be provided for the building. System shall be specified to be an open protocol direct digital control system following the BACnet protocol.

B. For each laboratory, in response to the room temperature sensor and/or the sash positions of the fume hoods, the DDC controls shall control a synchronized operation of the VAV supply air terminal, VAV fume hood exhaust, and VAV general exhaust system to maintain a constant offset per each door, that is the make-up air from the corridors shall be used to maintain negative air balance.
C. Control system shall be manufactured by Distech Controls to match the existing Campus Wide DDC Control System.

1.10. Testing, Adjusting, and Balancing:

A. Air test and balance report by an independent Test and Balance Contractor (TAB) that is AABC certified.

B. TAB shall perform vibration testing of equipment that is installed with vibration isolators.

C. TAB shall perform duct leakage testing on ductwork enclosed in a shaft and supply air ductwork upstream of air terminal units.

1.11. Space Requirement:

A. Refer to Architectural “ROOM DATA SHEET” for more details.

1. Anatomy Laboratory and Anatomy/Physiology Laboratory: Provide downdraft exhaust at student and instructor’s islands.

2. Balance Room: No specific requirement.

3. Bed and Medical Equipment Storage: No specific requirement.

4. Cadaver Room: Provide 2 snorkels for exhaust for autopsy in addition to low exhaust with stainless exhaust grilles.

5. Cat Storage Room: 100% low exhaust with stainless exhaust grilles.


7. Dean’s Administrative Assistants: No specific requirement.

8. Dean’s Meeting Room: No specific requirement.

9. Dean’s Office: No specific requirement.

10. Dean’s Office: Copy and Storage Room: Provide HVAC.

11. Digital Nursing Lab Testing Proctor Room: No specific requirement.

12. Digital Nursing Simulation Lab: No specific requirement.

13. Digital Nursing Lab Storage: No specific requirement.


15. Exit Foyer: No specific requirement.

16. Faculty Office Copy and Storage Room: No specific requirement.
17. Faculty Office Meeting Room: No specific requirement.
18. Fundamental Skills Lab: No specific requirement.
19. General Chemistry Lab: No specific requirement.
20. Hospital Bed Storage Room: No specific requirement.
21. ICU Simulation Lab: No specific requirement.
22. Janitor/Maintenance/Supplies: Provide HVAC supply and exhaust system.
23. Janitor Room: Provide HVAC supply and exhaust system.
24. Electrical Room: Provide mechanical cooling and exhaust ventilation.
25. Main Entrance Foyer Room: No specific requirement.
26. Large Medical Supplies Room: No specific requirement.
27. Medical/Surgical Simulation Lab: Provide fire alarm.
28. Men’s Staff Toilet: Provide HVAC supply and exhaust system.
29. Men’s Student Toilet: Provide HVAC supply and exhaust system.
31. OB/GYN Simulation Lab: No specific requirement.
32. Patient Room Toilet: Provide exhaust system.
33. Patient Simulation Lab: No specific requirement.
34. Pediatrics Simulation Lab: No specific requirement.
35. Secondary Electrical Room: Provide mechanical cooling and exhaust system.
36. Simulation Center Medical Supplies Room: No specific requirement.
37. Simulation Center: No specific requirement.
38. Skills Remediation Lab: No specific requirement.
39. Telecommunications Room: Provide a dedicated HVAC system for this room to accommodate servers in this room.
40. Typical Control Room: No specific requirement.
41. Patient, Pediatrics, Psychology, ICU, OB/GYN and Skills Remediation Simulation Lab Observation & Debrief Room: No specific requirement

42. Utility and Laundry Room: No specific requirement.

43. Women’s Staff Toilet: Provide HVAC supply and exhaust system.

44. Women’s Student Toilet: Provide HVAC supply and exhaust system.

2. PLUMBING

2.1. Goal:

A. Provide design, engineering, installation, and start-up, testing, adjusting, balancing, and commissioning of the complete, operational Plumbing systems for the entire project.

B. Applicable Plumbing design to comply with the LEED sustainable built environment criteria for New Construction, with the goal to achieve USGBC-LEED Silver (50-59 points for all applicable disciplines) certification or better.

C. Participate in the Statewide Saving By Design Energy Efficiency programs for new construction sponsored by Southern California Edison (SCE) or Southern California Gas Company (SoCalGas).

2.2. Scope of work:

A. Work includes the furnishing and installation of complete plumbing systems for the entire building. All materials will be new. The work will include, but not be limited to, the following principal items:

1. Plumbing fixtures and equipment.

2. Soil, waste and vent piping.

3. Roof drains; overflow drains and rainwater piping.

4. Potable and non-potable hot and cold water and tempered water piping.

5. Acid waste and vent piping systems.

6. Compressed air & vacuum piping System.

7. Acid Waste Neutralization.

8. Gas piping and earthquake valve.
9. Sleeves, hangers and brackets for piping systems. Provide special hangers to isolate transmission of sound and vibration from pipes and equipment.


11. Disinfection of potable water piping.

12. Piping insulation.

13. Extend water, waste, storm drain and gas piping outside of building and make final connections to site piping.

2.3. Plumbing fixtures:

A. General requirements:

1. Plumbing fixtures or fittings intended to dispense water for human consumption which contain more than 0.25% LEAD are not permitted to be sold or installed anywhere within the State of California. These devices shall be listed to ANNEX G of NSF/ANSI 61-2008 or other approved testing standard. Evidence of compliance shall be presented to the Building Inspector prior to final inspection (AB1963).

2. Unless otherwise specified, all fixtures shall be “water saving” type and shall be roughed-in from certified fixture manufacturer’s “roughing-in measurement drawings.

3. Fixtures will comply with the 2010 California Green Code as follows:

<table>
<thead>
<tr>
<th>Fixture</th>
<th>Flow Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Closets:</td>
<td>1.28-gallons per flush. Self sustaining water closet flush valves.</td>
</tr>
<tr>
<td>Urinals:</td>
<td>0.125-gallons per flush. Self sustaining water closet flush valves.</td>
</tr>
<tr>
<td>Faucets:</td>
<td>0.5-gallons per minute. Self sustaining faucets.</td>
</tr>
</tbody>
</table>

4. Water closets will be specified with sensor operated flushing devices to reduce water consumption. Flush valves shall incorporate either a hydroelectric generator or solar powered.

5. Lavatory faucets shall be equipped with hydroelectric generator or be solar powered.

2.4. Potable Hot Water:

A. The hot water source for new Building’s heating requirement will be supplied from the hot water heater located on Mechanical Penthouse.
B. One building pump shall be provided to circulate hot water in the Building.

C. Pumps shall be in-line type.

2.5. Soil, Water and Vent Systems:

A. Plumbing fixtures will be piped to outside of the building with hubless cast iron pipe and fittings.

B. Waste pipe will be extended to 5'-0" outside of the building and be connected under the Civil Section to site sewer.

2.6. Compressed Air & Vacuum Systems:

A. Centralized compressed air & vacuum systems for the science laboratories will be designed and the equipment will be located on Mechanical Penthouse.

B. Compressed air & vacuum piping will run to each laboratory and simulation room’s stations for the equipment.

2.7. Acid Waste and Vent Systems:

A. Chemical usage’s plumbing fixtures will be piped to outside of the building with flame retardant polyphylene pipes. Pipe and fittings shall be Schedule 40 wall thickness and shall be joined by mechanical joint for above ground piping and socket weld fusion jointing for under slab piping.

B. Acid waste pipe will run to an acid neutralizer tank outside of the building. Piping downstream of the acid neutralizer will be connected under the Civil Section to existing sewer.

C. Acid Waste Neutralization tank shall be installed in the ground outside the building.

2.8. Gas System:

A. Gas service will be provided from an existing gas main.

B. At the building, a gas pressure reducing valve will be installed to reduce the gas pressure inside the building to 8-inch water column.

C. An earthquake actuated valve will be installed at gas service.

D. Gas piping will be distributed inside the building as required.

2.9. Rain Water Systems:

A. Roof drains, overflow drains and leaders will be designed for 2-inch per hour rainfall.
2.10. **Piping Material:**

A. Soil, waste, vent piping and rainwater piping will be service weight hubless cast iron with neoprene gasket and stainless steel bands. Pipe, fittings and couplings will conform to the standards contained in the cast iron soil pipe institute standard 301.

B. Potable and non-potable cold and hot water, compressed air and vacuum piping & indirect drain piping above grade or slab will be type “L” hard drawn copper tubing with wrought copper or cast bronze solder type fittings. Joints in all copper water lines shall be soldered with solder containing no lead.

C. Potable and non-potable cold and hot water, compressed air and vacuum piping & indirect drain piping below grade or slab will be type “K” hard drawn copper tubing with wrought copper or cast bronze solder type fittings. Joints in all copper water lines shall be soldered with solder containing no lead.

D. Acid resistant drain and vent piping: Shall be of flame retardant polyphoplylene. Pipe and fittings shall be Schedule 40 wall thickness and shall be joined by mechanical joint for above ground piping and socket weld fusion jointing for under slab piping. Installation and testing shall be in accordance with contract drawings. The manufacturer’s recommendations and the local plumbing code.

E. De-ionized water piping will be of flame retardant Polypropylene Schedule 40 wall thickness pipe and fittings. Installation and testing shall be in accordance with contract documents, the manufacturer’s recommendation and the California plumbing Code.

F. Gas piping will be schedule 40 black steel pipe with welded joints.

2.11. **Space Requirement:**

A. For the fixtures and equipment utilities requirements refer to Architectural “ROOM DATA SHEET”.

B. Anatomy Laboratory and Anatomy/Physiology Laboratory: Provide required plumbing utilities.

1. **Sinks:** Fixture at the instructor’s station to be specified under the Architectural section. Sink Trim laboratory model with gooseneck and vacuum breaker for cold and hot water supply unless otherwise directed, supplies will be provided with individual stops under the counter, waste and vent of materials specified. Five foot sinks at side counters to be specified under the Architectural section. Sink Trim laboratory model with gooseneck and vacuum breaker for cold and hot water supply unless otherwise directed, supplies will be provided with individual stops under the counter, waste and vent of materials specified.
2. **Emergency shower-eye wash**: Free standing all in one package combination shower and eye wash will be provided. Tepid water piping will be provided at the equipment point of connection; a thermostatic mixing valve will be required for the delivery of tepid water to the shower and the eye wash.

3. **Floor Drain**: One floor drain will be provided adjacent to the Emergency shower-eye wash. Trap priming line to the floor drain primer connection will be provided to maintain trap seal as per UPC.

4. **Trap Primer**: Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.

5. **Turrets-lab air, lab vacuum**: Turrets will be provided wherever indicated on the drawings. Lab natural gas, air and vacuum will be roughed in for the connection to the fume hoods. Isolation valves in wall box with access door located strategically to provide easy access for turning off the service when required will be provided as part of the design.

C. **Cadaver Room**: Provide required plumbing utilities.

1. **Sinks**: Five foot stainless steel Fixture at the counter along the all as indicated on the Architectural drawings. Sink Trim laboratory model with gooseneck and vacuum breaker for cold and hot water supply controlled with foot pedals unless otherwise directed, supplies will be provided with individual stops under the counter, waste and vent of materials specified.

2. **Emergency eye wash**: Counter type eye wash will be provided next to the five foot sink. Tepid water piping will be provided at the equipment point of connection; a thermostatic mixing valve will be required for the delivery of tepid water to the eye wash.

3. **Floor Drains**: Floor drains will be provided at each of the locations indicated on the drawings. Trap priming line to floor drains will be provided. Temperature of room will dictate if the use of heat trace will be required for the floor drain trap and the primer water line connection to prevent freezing of the trap standing water.

4. **Trap Primer**: Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.

D. **Cat Storage Room**: Provide required plumbing utilities.

1. **Sinks**: Fixture will be provided at the locations indicated on drawings. Sink trim laboratory model with gooseneck and vacuum
breaker unless otherwise requested. Supplies to sink will be controlled by foot pedals. Hose bibb with vacuum breaker will be provided.

2. **Emergency eye wash:** Free standing type eye wash will be provided. Tepid water piping will be provided at the equipment point of connection; a thermostatic mixing valve will be required for the delivery of tepid water to the eye wash.

3. **Floor Drains:** Floor drains will be provided at each of the locations indicated on the drawings. Trap priming line to floor drains will be provided. Temperature of room will dictate if the use of heat trace will be required for the floor drain trap and the primer water line connection to prevent freezing of the trap standing water.

4. **Trap Primer:** Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.

E. **General Chemistry Lab:** Provide required plumbing utilities.

1. **Sinks:** Fixture to be specified under the Architectural section. Sink Trim laboratory model with gooseneck and vacuum breaker for cold and hot water supply unless otherwise directed, supplies will be provided with individual stops under the counter, waste and vent of materials specified. Sink Trim laboratory model with gooseneck and vacuum breaker for cold water supply unless otherwise directed, supply will be provided with individual stop under the counter, acid type waste and vent of materials specified.

2. **Emergency eye wash:** Counter type eye wash will be provided at the specified location next to the sink. Tepid water piping will be provided at the equipment point of connection; a thermostatic mixing valve will be required for the delivery of tepid water to the eye wash.

3. **Emergency shower-eye wash:** Free standing all in one package combination shower and eye wash will be provided. Tepid water piping will be provided at the equipment point of connection; a thermostatic mixing valve will be required for the delivery of tepid water to the shower and the eye wash.

4. **Floor Drain:** One floor drain will be provided adjacent to the Emergency shower-eye wash. Trap priming line to the floor drain primer connection will be provided to maintain trap seal as per UPC.

5. **Trap Primer:** Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.
6. **Turrets-lab air, lab vacuum:** Turrets will be provided wherever indicated on the drawings. Lab natural gas, air and vacuum will be roughed in for the connection to the fume hoods. Isolation valves in wall box with access door located strategically to provide easy access for turning off the service when required will be provided as part of the design.

F. **Digital Physical Science Lab:** Provide required plumbing utilities.

1. **Sink:** Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

G. **Copy/Storage:** Provide required plumbing utilities.

1. **Sink:** Fixture shall be of single type faucet installation. Provided with all functioning trims, faucet shall be operated via handlers and provided with individual stops.

H. **Nursing Fundamentals lab:** Provide required plumbing utilities.

1. **Sinks:** Fixture will be provided at the locations indicated on drawings. Sink trim healthcare model with gooseneck and unless otherwise requested. Supplies to sink will controlled by foot pedals.

I. **Medical Supplies:** Provide required plumbing utilities.

1. **Sink:** Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

J. **Utility and Laundry Room:** Provide required plumbing utilities.

1. **Floor Drain:** One floor drain will be provided at location indicated on the drawings. Trap priming line to the floor drain primer connection will be provided to maintain trap seal as per UPC.

2. **Trap Primer:** Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.

3. **Laundry Utilities:** Provide cold & hot water and waste connections’ box.

K. **Janitor’s Room:** Provide required plumbing utilities.

1. **Mop Sink:** Fixture will be provided at the locations indicated on drawings. Sink trim with vacuum breaker.
2. **Floor Drain:** One floor drain will be provided adjacent to the Emergency shower-eye wash. Trap priming line to the floor drain primer connection will be provided to maintain trap seal as per UPC.

3. **Trap Primer:** Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.

4. **Water heater:** Gas fired Water heater to provide hot water to the staff R.R’s as well as the facility sinks will be provided in the mechanical room where a space heating boiler is to be located.

L. **Staff Toilet Rooms:** Provide required plumbing utilities.

1. **Lavatory:** Fixture shall be wall mount, single temperature supply faucet installation. Provided with all functioning trims, supply to be provided with individual stop.

2. **Water Closet:** Wall mounted type, flush valve.

3. **Floor Drain:** One floor drain will be provided at location indicated on the drawings. Trap priming line to the floor drain primer connection will be provided to maintain trap seal as per UPC.

4. **Trap Primer:** Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.

M. **Men’s and Women’s Toilet Room:** Provide required plumbing utilities.

1. **Lavatory:** Fixture shall be wall mount, single temperature supply faucet installation. Provided with all functioning trims, supply to be provided with individual stop.

2. **Water Closet:** Wall mounted type, fixture support in wall and flush valve.

3. **Waterless Urinal:** Wall mounted type, fixture support in wall.

4. **Floor Drain:** One floor drain will be provided at location indicated on the drawings. Trap priming line to the floor drain primer connection will be provided to maintain trap seal as per UPC.

5. **Trap Primer:** Trap primer will be provided in wall box with access door located strategically to provide trap priming lines to the floor drains. Trap primer water supply line will be provided with an individual isolation shut off valve.
N. Digital Nursing Lab: Provide required plumbing utilities.

1. **Sink**: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

O. Patient Room Simulation Lab with Toilet: Provide required plumbing utilities.

1. **Sink**: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

2. **Medical air wall outlets**: Wall outlets will be provided where indicated on the drawings. Air and vacuum will be roughed in to simulate actual conditions. Area Isolation valves in wall box or above ceiling for turning off the service when required will be provided as part of the design.

3. **Lavatory**: Fixture shall be wall mount, single temperature supply faucet installation. Provided with all functioning trims, supply to be provided with individual stop.

4. **Water Closet**: Wall mounted, flush valve

P. OB/GYN Simulation Lab: Provide required plumbing utilities.

1. **Sink**: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

2. **Medical air wall outlets**: Wall outlets will be provided where indicated on the drawings. Air and vacuum will be roughed in to simulate actual conditions. Area Isolation valves in wall box or above ceiling for turning off the service when required will be provided as part of the design.

Q. Pediatrics Simulation Lab: Provide required plumbing utilities.

1. **Sink**: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

2. **Medical air wall outlets**: Wall outlets will be provided where indicated on the drawings. Air and vacuum will be roughed in to simulate actual conditions. Area Isolation valves in wall box or above ceiling for turning off the service when required will be provided as part of the design.
R. ICU Simulation Lab Room: Provide required plumbing utilities.

1. Sink: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

2. Medical air wall outlets: Wall outlets will be provided where indicated on the drawings. Air and vacuum will be roughed in to simulate actual conditions. Area Isolation valves in wall box or above ceiling for turning off the service when required will be provided as part of the design.

S. Med. Surgical Simulation Lab: Provide required plumbing utilities.

1. Sink: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

2. Medical air wall outlets: Wall outlets will be provided where indicated on the drawings. Air and vacuum will be roughed in to simulate actual conditions. Area Isolation valves in wall box or above ceiling for turning off the service when required will be provided as part of the design.

T. Simulation Center Nurse’s Station Area: Provide required plumbing utilities.

1. Sink: Fixture shall be of single deck perforation for gooseneck type faucet installation. Provided with all functioning trims, faucet shall be operated via foot pedals and provided with individual stops.

U. Corridor: Provide required plumbing utilities

1. Provide hi & low electric water cooler per Code.