

## Attachment D – 19300 – Descriptions for MEP Systems

### **POULTRY BUILDINGS:**

#### **PLUMBING**

All work shall meet the requirements of the following:

- The Kentucky Building Code (KBC)
- ASHRAE 90.1 - 2010
- Applicable Local Codes and Ordinances
- National Electrical Code (NEC)
- Occupational Safety and Health Administration (OSHA)
- American National Standards Institute (ANSI)
- American Society for Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- American Water Works Association (AWWA)
- National Electrical Manufacturers Association (NEMA)

Coordinate with utility company and size site natural gas piping to meet individual building requirements.

Provide reduced pressure backflow preventer at water entrance and plumbing fixtures as shown on drawings. Floor drains shall be cast iron type as required. Connect plumbing fixtures to utility piping as required. Install concealed freeze-proof hose bibb on each face of building. Sanitary piping shall be cast iron, Type L copper, or PVC. Domestic water piping shall be Type L copper.

Provide natural gas water heater sized to serve all building fixtures. Natural gas piping shall be Schedule 40 black.

#### **HVAC**

All work shall meet the requirements of the following:

- The Kentucky Building Code (KBC)
- ASHRAE 90.1 - 2010
- Applicable Local Codes and Ordinances
- National Electrical Code (NEC)
- Occupational Safety and Health Administration (OSHA)
- Air Conditioning and Refrigeration Institute (ARI)
- Air Diffusion Council (ADC)
- Air Movement and Control Association, Inc. (AMCA)
- American National Standards Institute (ANSI) Laboratory Ventilation
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- American Society of Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- American Water Works Association (AWWA)
- Institute of Boiler and Radiator Manufacturers (IBR)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)

Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)  
Underwriters' Laboratories (UL)

Gas equipment with DX air conditioning shall serve buildings as required. In general, rooms of similar occupancy types (such as break rooms and office) will be allowed as a single zone. Rooms of different occupancy types (such as offices and labs) shall be on separate zones. Systems shall be standalone. Code required outside air shall be conditioned thru a dedicated unit and distributed to required areas.

Exhaust air shall be provided as required based on room usage.

Sheet metal ductwork shall be constructed for 2 inches low pressure and insulated with 1½" fiberglass.

Evaporative Cooling & Ventilation: Areas identified on the drawings to receive evaporative cooling and ventilation shall be designed to meet the American Society of Agricultural and Biological Engineers ASAE EP270.5 DEC1986 (R2017) "Design of Ventilation Systems for Poultry and Livestock Shelters" and ANSI/ASAE EP282.2 FEB1993 (R2018) "Design Values for Emergency Ventilation and Care of Livestock and Poultry"

## **ELECTRICAL**

All work shall meet the requirements of the Kentucky Building Code, the National Electric Code, and ASHRAE 90.1-2010, latest additions.

Provide to receive one electrical power service entrance per building. Provide sizing information of electrical service per the attached load data sheet. Provide to receive two separate emergency power feeds into building: one for life safety emergency distribution and one for equipment emergency distribution (these loads should be separated onto separate panels within each building).

Provide receptacles and power connections for all equipment. Provide convenience receptacles for flexibility. Provide explosion proof fixtures where required. Provide GFI receptacles within 6' of any water source, in restrooms, and outside. Provide weather covers for receptacles on building exterior and on interior hose down areas.

All lighting is to be energy efficient LED. Where buildings/rooms/spaces are to be used 24 hours a day, provide light switches to control lighting. Where rooms will not be used 24 hours a day, provide control of lighting per ASHRAE 90.1-2010. Provide building mounted, exterior lighting for security and convenience around building exterior. Provide emergency egress lighting at all building entrances.

Provide data/voice receptacles to all equipment needing such connections. Provide room in a dry, conditioned space for floor standing data/voice equipment rack. Provide minimum of three 20A/1P circuits and one 30A/2P 208V receptacle at data rack for telecommunications system power.

**OFFICE BUILDING EXCLUDING LABS, INCUBATOR, AND PROCESSING AREAS:**

**PLUMBING**

All work shall meet the requirements of the following:

- The Kentucky Building Code (KBC)
- ASHRAE 90.1 - 2010
- Applicable Local Codes and Ordinances
- National Electrical Code (NEC)
- Occupational Safety and Health Administration (OSHA)
- American National Standards Institute (ANSI)
- American Society for Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- American Water Works Association (AWWA)
- National Electrical Manufacturers Association (NEMA)

Coordinate with utility company and size site natural gas piping to meet individual building requirements.

Provide reduced pressure backflow preventer at water entrance and plumbing fixtures as shown on drawings. Floor drains shall be cast iron type as required. Connect plumbing fixtures to utility piping as required. Install concealed freeze-proof hose bibb on each face of building. Sanitary piping shall be cast iron, Type L copper, or PVC. Domestic water piping shall be Type L copper.

Provide natural gas water heater sized to serve all building fixtures. Natural gas piping shall be Schedule 40 black.

**HVAC**

All work shall meet the requirements of the following:

- The Kentucky Building Code (KBC)
- ASHRAE 90.1 - 2010
- Applicable Local Codes and Ordinances
- National Electrical Code (NEC)
- Occupational Safety and Health Administration (OSHA)
- Air Conditioning and Refrigeration Institute (ARI)
- Air Diffusion Council (ADC)
- Air Movement and Control Association, Inc. (AMCA)
- American National Standards Institute (ANSI) Laboratory Ventilation
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- American Society of Mechanical Engineers (ASME)

American Society for Testing and Materials (ASTM)  
American Water Works Association (AWWA)  
Institute of Boiler and Radiator Manufacturers (IBR)  
National Electrical Manufacturers Association (NEMA)  
National Fire Protection Association (NFPA)  
Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)  
Underwriters' Laboratories (UL)

Gas equipment with DX air conditioning shall serve buildings as required. In general, rooms of similar occupancy types (such as break rooms and office) will be allowed as a single zone. Rooms of different occupancy types (such as offices and labs) shall be on separate zones. Systems shall be standalone. Code required outside air shall be conditioned thru a dedicated unit and distributed to required areas.

Exhaust air shall be provided as required based on room usage.

Sheet metal ductwork shall be constructed for 2 inches low pressure and insulated with 1½" fiberglass.

## **ELECTRICAL**

All work shall meet the requirements of the Kentucky Building Code, the National Electric Code, and ASHRAE 90.1-2010, latest additions.

Provide to receive one electrical power service entrance per building. Provide sizing information of electrical service per the attached load data sheet. Provide to receive two separate emergency power feeds into building: one for life safety emergency distribution and one for equipment emergency distribution (these loads should be separated onto separate panels within each building). The walk-in freezer/cooler are to be connected to the emergency equipment branch distribution.

Provide receptacles and power connections for all equipment. Provide convenience receptacles for flexibility. Provide explosion proof fixtures where required. Provide GFI receptacles within 6' of any water source, in restrooms, and outside. Provide weather covers for receptacles on building exterior and on interior hose down areas. In all offices, provide two quadruplex receptacles with one on each side wall of the office and connected to a shared circuit. Provide one duplex receptacle on the front (door) wall and back wall of each office with these receptacles on a shared circuit and controlled by a time schedule to turn off per the schedule (per ASHRAE 90.1-2010). Provide minimum of three 20A/1P circuits and one 30A/2P 208V receptacle at data rack for telecommunications system power. Provide multiple duplex receptacles on multiple circuits above counters in the lab spaces for flexibility.

All lighting is to be energy efficient LED. Where buildings/rooms/spaces are to be used 24 hours a day, provide light switches to control lighting. Where rooms will not be used 24 hours a day, provide control of lighting per ASHRAE 90.1-2010. Provide building mounted, exterior lighting for security and convenience around building exterior. Provide emergency egress lighting at all building entrances.

Provide data/voice receptacles to all equipment needing such connections. Provide room in a dry, conditioned space for floor standing data/voice equipment rack. Each office shall have one data

receptacle on each side wall (adjacent to each quadruplex receptacle) with two data ports in each receptacle. Lab spaces shall have multiple data ports for flexibility. Provide data ports above ceiling for Owner-installed WIFI devices.

#### REQUIREMENTS:

All wiring devices shall be specification grade and shall be rated for 125V, 20A.

All wiring shall be THHN-THWN and contained within EMT conduit inside except where environmental conditions require alternate types of conduit. Exterior below grade conduit shall be PVC Sch. 40 minimum. Exterior above grade conduit shall be RGC. All feeders and branch circuits shall contain a separate ground wire.

All panelboards, junction boxes, cabinets, etc. shall be suitable for the environment in which they are installed.

Data/voice cabling and connectors shall be Cat 6a. Where exposed to the environment, use plenum rated cabling where required.

All fire alarm and security system cabling shall be run in conduit.