

*James Mercer*

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James Mercer, A.D., Project Manager  
Pennsylvania Game Commission

Date

## TECHNICAL SPECIFICATIONS

*The following stipulations, specifications and description of work are defined and described as Technical Specifications and it is understood and agreed that everything herein contained is hereby made part of the contract. Wherever any feature of the work is not fully set forth in these Technical Specifications, it must be understood that the same shall be governed by the rules of the best prevailing practice for that class of work, as determined by the Game Commission's Representative.*

*These Technical Specifications and any drawings, maps and/or plans forming a part thereof, will cover the furnishing of all labor, technical assistance, equipment, tools and materials necessary to perform the design and construction work, as required under this contract.*

Section 17	HVAC System
Section 18	Lighting and Electric
Section 19	Plumbing

## DRAWINGS

The following drawings are included:

- 1 of 5 – Location map, Floor Plan and Elevations
- 2 of 5 - Framing Details
- 3 of 5 - Electrical Details
- 4 of 5 - Plumbing Details
- 5 of 5 - HVAC Plan and Site Plan

**TECHNICAL SPECIFICATION SECTION NO. 17 – HEATING SYSTEM AND DUCTWORK** *Separation of Contract, to be awarded separate*

**17.1 - SCOPE**

This work is providing and installing the heat pump, air handler, ductwork, registers and grilles that make up the new building's heating system.

**17.2 – MATERIALS**

**A. Heat Pump and Air Handler** – Bosch Heat Pump BOVA-060-HDN1-M18M and a BOVA-048-WN1-M18 or an approved equal with the following characteristics.

1. 5-ton, Modulating Inverter System
2. All materials and workmanship to be guaranteed for one year from date of installation. Manufacturer's 5-year warranty on functional parts & compressor.
3. Minimum 18 SEER and 9.5 HSPF with matched 4-ton air handler
4. Variable speed blower motor
5. 15kW minimum emergency backup staged electric heat strips
6. Outdoor unit is to be equipped with snow legs
7. Outdoor unit is to be installed on composite, formed or precast concrete pad

**B. Thermostat** – Bosch BCC100 Wi-Fi Thermostat or an approved equal.

**C. Ductwork** – To be sized and installed from the requirements and procedures of SMACNA. Ductwork to meet or exceed UCC code requirements. All supply ducts to be insulated as per code.

**D. Hanger Rods and Supports** – Cadmium plated steel rods and nuts.

**E. Grills and Registers** – Steel with baked white enamel finish.

**17.3 - PROCEDURE**

Conform to the manufacturer's requirements when installing the heat pump, air handler and other components of the heating system. The drawings show the suggested size, location and layout of the ductwork and grilles/registers for each room in the building. Layout can be modified if air flows and system performance can be maintained. Mount ductwork with the applicable hardware.

Install the thermostat in the break room/office. Make the required electrical connections to operate the system. Test the HVAC system and make any necessary balance adjustments in the ductwork. Demonstrate system to PGC on site staff.

**17.4 - MEASUREMENT AND PAYMENT**

Lump Sum.

**TECHNICAL SPECIFICATION SECTION NO. 18 – LIGHTING, ELECTRIC AND SERVICE CONNECTION** *Separation of Contract, to be awarded separate*

**18.1 - SCOPE**

This work is providing and installing the components of the lighting and electric system for the new building as shown on the Drawings. This work includes trenching for U.G. electric from existing pole or pad to new building as well as installing a 200-amp panel and installation of the telephone and data lines from the office to the mechanical room and office.

**18.2 – GENERAL**

The drawings are indicative of the character and scope of the electrical work and are not intended to show all the details. The actual location of all wiring, outlets and equipment shall be determined at the site. The Contractor may install flush mount or recessed boxes in the heated bay on the FRP walls.

All work shall be manufactured, tested and installed accordance with the National Electric Code (NEC) 2005, the International Building Code (IBC) 2015 and all applicable local codes. The Contractor shall furnish a fire underwriter's certificate of inspection covering the work installed under this specification.

**18.3 – MATERIALS**

**A. Circuit Panel Box** – The circuit panel box shall be dead front design complying with NEMA PB 1 and be circuit breaker type. Panel-board bus shall be copper with copper ground bus. The enclosure shall be NEMA PB 1, Type 1 with a surface type cabinet front, screw fastened cover with hinged door and flush lock. Finish color is standard gray enamel. Provide a 40-space minimum panel box (200-amp service) for the new building. Acceptable manufacturers are Siemens, Cutler-Hammer, Square-D or General Electric. No Homeline will be accepted.

**B. Circuit Breakers** – The circuit breakers are molded case circuit breakers conforming to NEMA AB 1, stab lock design. Circuit breakers must be equipped with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type SWD for lighting circuits. Do not use tandem circuit breakers. Acceptable manufacturers shall be Siemens, Cutler-Hammer, Square-D or General Electric. No Homeline will be accepted.

**C. Wire** – Romex type NM-B AWG #6 through #12 wire with ground. Wire must be in conduit where exposed.

**D. Outlet and Junction Boxes** – Metal or PVC for surface or recessed mounting only in the heated bay and outside of the building. Provide closures for unused ports and

waterproof covers for outside receptacle boxes. PVC "New Work" boxes can be used in walls.

**E. Outlets and Switches** – Rated for 20 amps (or more if required by equipment manufacturer), 120/277 and as manufactured by Hubbell, Bryant, Arrow-Hart, GE, P&S or Leviton.

**F. Lighting Fixtures** – The lighting fixture schedule is shown on the drawings.

**G. Bulbs** – Install the maximum wattage as recommended by the lighting fixture manufacturer.

**H. Conduit** – **All exposed wiring shall be in conduit.** Conduit shall be Schedule 40 PVC rigid non-metallic conduit conforming to NEMA TC-2 and UL651. Conduit fittings shall conform to NEMA TC-3 and UL514b. MC cable may be used in unheated storage bay area if desired.

### **18.3 - PROCEDURE**

The installation of every component in the electrical system must be performed according to the National Electric Code (NEC).

Mount the circuit panel box and outlet boxes for the lighting fixtures, equipment power supplies and receptacles in the locations as shown on the Drawings.

Drill holes in the lumber wall framing to run wiring as necessary to all fixtures, equipment and outlet locations. Use conduit in the heated and not heated bay areas of the building where wiring would be exposed. Secure the conduit with clamps approved by the manufacturer. Conduit must be extended and connected to all the outlet boxes. Use solvent cement for all conduit joints and connections. Pull wire through conduit without stripping insulation from the wires.

Install the light fixtures, switches and receptacles in the outlet boxes. Make the required conductor and ground connections. Install the light bulbs in the fixtures.

Trench for the electrical service from the existing service pole to the new building. Telephone and data lines to be installed from the office to the mechanical room. The tele/data lines from the pole will be installed by others in contractor provided conduit. Contractor may use same trench if maintain required separation.

Trench to the septic grinder pump and install wire for pump.

### **18.4 - MEASUREMENT AND PAYMENT**

The satisfactorily installed electrical system and connection will be measured as a lump sum.

**TECHNICAL SPECIFICATION SECTION NO. 19 – PLUMBING**

*Separation of Contract, to be awarded separate*

**19.1 - SCOPE**

This work is providing and installing the components of the water supply and drainpipe systems inside the building. Connections to the water well supply, septic tank, trench drains, mechanical room floor drain, piping for these drains and all cabinets and fittings are part of this contract. The septic tank and well to be included in this contract but a separate line item bid.

**19.2 – MATERIALS, WATER SUPPLY & FITTINGS**

**A. Water Supply Pipe** - The water supply (hot and cold) pipes can be CPVC (conforming to ASTM D2846 and NSF 61) or type “L” copper.

**B. Water Supply Fittings and Valves** – CPVC conforming with ASTM D2846 and NSF 61, copper or brass fittings and valves per manufacturer. Hose bibbs to be brass anti-siphon frost proof with shut off valve mounted above.

**C. Waste and Vent Pipe and Fittings** – Schedule 40 PVC conforming with ASTM D1784, D1785 and D2665.

**D. Pipe Cements** – The solvent cement for making connections in CPVC pipes and fittings shall conform to ASTM F493. The solvent cement for making connections in PVC pipes and fittings shall conform to ASTM D2564. The primer for making connections in CPVC and PVC pipes and fittings shall conform to ASTM F656.

**E. Pipe Insulation** – Self sealing elastomeric sleeves conforming to ASTM C534.

**F. Supply Lines to Faucets and Toilets** – Flexible braided stainless steel.

**G. Shower Valve and Head** – Residential grade compatible with water supply piping.

**H. Water Supply Service Pipe** – The water supply service line from the well to the new building water supply system may be Type “K” copper, PVC approved for drinking water or HDPE pipe.

**I. Trench Drains** – The trench drains in the bays shall be 48” long NDS Dura Slope DS-091 or an approved equal. The trench drains are to be 3” lower than finished floor elevation with concrete sloped from the perimeter to the drains. The drains shall have a heavy-duty steel grate capable of supporting vehicles and/or heavy equipment.

**J. Floor Drain** – The floor drain in the mechanical room shall be a 3-inch PVC general purpose floor drain equipped with a removable stainless-steel strainer such as an Oatey Model #43579.

### 19.3 – MATERIALS, PLUMBING FIXTURES

**A. General** – Refer to the elevations and fixture legend on the drawings for the layout of the bathroom and fixture installation location. Manufacturers and model numbers of fixtures are listed below to set a standard for performance, size and finish. Other manufacturers are acceptable provided that their products are the same or better level of quality.

**B. Bathroom Shower Control/Head** – American Standard control & head

1. Polished chrome finish
2. Lever handle design
3. ADA compliant

**C. Toilet** – KOHLER Highline 2-piece Comfort Height Elongated Toilet (MFG# K-3493-RA-0) or approved equal meeting the following requirements.

1. White vitreous china construction
2. Elongated bowl and min. bowl rim height of 17" (ADA compliant)
3. Include or supply tank hardware, wax ring and elongated polypropylene finish white toilet seat
4. Pressure assist flushing system (1.4-gallon flush)
5. 12-inch rough-in

**D. Grab Bars** – Bradley Model 812 heavy-duty stainless-steel grab bars, 1-1/2" outside diameter, standard finish and concealed mounting or approved equal. There are two grab bars to be installed; the 24-inch long bars are to be mounted behind the toilet tank and alongside the toilet.

**E. Paper Towel Dispenser** – Bradley Model 250-15 heavy duty 22-gauge stainless steel for c-fold/multi-fold towels that is surface mounted with a tumbler lock or approved equal.

**F. Toilet Tissue Dispenser** – Bradley Model 508 chrome plated brass or approved equal.

**G. Mirrors** – Bradley Model 780 (18" x 36") stainless steel or approved equal. There are two mirrors to be installed. One is to be installed above the sink in the bathroom and one is to be installed above the utility sink in the shop area.

**H. Soap Dispenser** – Bradley Model 655 20-gauge stainless steel with a 40-ounce capacity or an approved equal. May substitute a GOJO if approved by the PGC.

**I. Shower Stall & Lining** – One-piece gelcoated fiberglass shower with textured floor. Fiberglass Reinforced Panels with trim shall be used in area above the one-piece shower.

The panels shall have a finished color white, silver, almond or ivory. Tile may be installed if desired.

**J. Exhaust Fan** – Nutone Model # HD80NT exhaust fan or approved equal with the following characteristics.

1. 80 CFM
2. Permanently lubricated motor, resilient motor mount to isolate vibration
3. Steel with white finish
4. UL listed and HVI certified for safe use over showers
5. Ceiling mount with galvanized steel housing.

Match the ductwork and louvered end cap to the exhaust fan capacities.

#### **19.4 – MATERIALS, PLUMBING SINKS, CABINETS AND FAUCETS**

**A. General** – Refer to the elevations and fixture legend on the drawings for the layout of the utility sink and cabinets. Manufacturers and model numbers of fixtures are listed below to set a standard for performance, size and finish. Other manufacturers are acceptable provided that their products are the same or better level of quality.

**B. Utility Sink** – Swan 23” x 23” Veritek Single Bowl Laundry Tub (MFG# MF-1F) or approved equal meeting the following requirements.

1. White, 22-gallon capacity
2. Angular steel legs

**C. Utility Sink Faucet** – American Standard Cadet 2-Handle Laundry Faucet (MFG# 7573.140.002) or approved equal meeting the following requirements.

1. Solid brass construction with Satin finish
2. Ceramic disk valves
3. Brass swivel spout with hose end
4. 2.2 GPM flow rate
5. ADA compliant

**D. Utility Cabinets** – Kitchen Classics Hickory base and wall cabinets or approved equal w/Satin finish hardware (knobs) and adjustable shelves and meeting the following requirements and nominal sizes.

1. Base cabinets (2) - 24” W and 35”H with single door and drawer
2. Wall cabinets (2) 21” W and 30”H with single door

**E. Restroom and Break room Cabinets** – Kitchen Classics Hickory base and wall cabinets or approved equal w/Satin finish hardware (knobs) and adjustable shelves and meeting the following requirements and nominal sizes.

1. Base cabinets (2) - 18” W and 35”H with single door and drawer
2. Sink Base cabinets (1) - 24” W and 35”H with single door
2. Wall cabinets (2) 15” W and 30”H with single door
3. Wall cabinet (1) - 21” W and 30”H with single door

**F. Break Room Faucet** – American Standard Colony Soft Gooseneck Spout faucet (MFG# 4275.550.002) or approved equal meeting the following requirements.

1. Polished chrome finish
2. 4" centerset design
3. 2 handle lever design
4. Gooseneck spout (10" min. height)
5. ADA compliant

**G. Break Room Sink** – Kohler Staccato Stainless-Steel single-basin commercial sink (Model# 3363-3-NA) meeting the following requirements.

1. Single bowl 20-inch width
2. 8-inch depth
3. Sound-absorption material applied
4. 18 gauge

**H. Countertops** – Granite look laminate with fully laminated edges and backsplash.

#### **19.5 – MATERIALS, WATER HEATER**

**A. Water Heater** – The water heater shall be an electric water heater with the following features and characteristics:

1. AO Smith 40-gallon tank, short and 240 volts
2. Dual 5,500-watt copper, stainless or titanium elements
3. Minimum 9-year warranty on the tank
4. Minimum 25 GPH recovery @ 90°F
5. Factory installed temperature/pressure relief valve
6. Adjustable thermostat

**B. Drip Pan** – Black plastic (polyethylene) with pre-cut side opening for 1-inch drain fitting. The diameter of the drip pan shall be at least 2-inches greater than the outside diameter of the water heater. Raise drip pan and heater with suitable blocking to aid in draining the tank.

#### **19.6 – MATERIALS, GRINDER PUMP**

**A. Grinder Pump** – The grinder pump shall be an electric water heater with the following features and characteristics:

1. Zoeller 810/815 230-volt, 1 Ph, 1 HP grinder pump
2. Indoor/Outdoor Audible & Visual High-Water Alarm
3. 24" x 72" Cold Climate Poly Ribbed Basin
4. 25' Prewired Conduit with Qwik Box
5. 15' Single Piggyback Switch



### **19.7 - SUBMITTALS**

Submit a catalog cut or other information for the utility sink, faucet, cabinets, light and countertops from the manufacturers to the PGC for review and approval before ordering any materials.

### **19.8 - PROCEDURE**

Conform to the requirements of the International Plumbing Code for all work conducted under this section. Lay out supply, waste and vent pipes so that structural supports do not have to be cut or drilled through. Use applicable hangers/supports for all pipes where needed.

Install 3/4-inch pipe from well shut off as a branch line to the water heater and 1/2-inch connection for the faucets, shower and toilet. Install shut-off valves in the supply piping at the sinks and at the toilet. Install flexible stainless-steel supply pipe from the shut-off valves to the faucets and toilet. Cover the hot water supply pipes with sleeve insulation.

Waste and vent pipes shall be PVC. Use 1 1/2-inch PVC for sink drains. Use 2-inch and 3-inch pipe for vents as shown on the sewage schematic. Use 3-inch PVC for the toilet drain and 4-inch PVC for the sewer lateral drainpipe that exits from the building. Install the applicable traps, toilet flanges and other fittings connections under plumbing fixtures. Excavate outside the building to run the sewer pipe to the grinder pump and provide a conduit for the water supply to enter under the building slab. Excavate the trench as shown on the Drawings. The trench depth will vary with the existing ground level and the slope of the pipe. The pipes shall be sloped at a minimum 1/4-inch per foot. Install the solid drainage pipe in the trench and backfill with AASHTO #10 stone. Complete backfilling of the trench with excavated material outside the building and #2A coarse aggregate under the floor of the building.

Excavate the trench drain areas as recommended by the manufacturer so the units can be surrounded by at least 6-inches of concrete. The top of the trench drains is to be below the finished elevation of the concrete floor to properly drain. Protect the trench drains during concrete placement so that concrete does not enter the units. Secure the trench drains so that they are not displaced during concrete operations. Use essentially the same procedure for installing the floor drain in the mechanical room.

Connect sewer to grinder pump. Install pump. Basin and alarm according to manufacturer guidelines and recommendations.

### **19.9 - MEASUREMENT AND PAYMENT**

Lump Sum.