



July 14, 2023

Craig Gaulden Davis
19 Washington Park
Greenville, SC 29601

REFERENCE: FOUNTAIN INN HIGH SCHOOL ADDITION
HVAC NARRATIVE

Attn: Charles Gunning

Mr. Gunning:

The purpose of this letter is to define and describe the building HVAC concepts for the Fountain Inn High School Addition. These concepts are based on the same concepts as used in the original Fountain Inn HS construction project.

The proposed HVAC system for Fountain Inn HS Addition will be a 4-pipe HVAC system. The existing chiller/boiler plant will be upgraded with new equipment to accommodate the addition.

Academic Wing Addition (VAV System with Dedicated Outside Air Units):

The HVAC system for the classroom wing addition will consist of a 4-pipe chilled water/hot water system where rooftop air-handling units are used to condition primary (supply) air that serve variable air volume (VAV) terminals. The air-handling units will condition the primary air with chilled water and hot water coils. Each classroom, workroom, and other temperature control zones will have a parallel, fan powered VAV terminal with hot water heat installed above the ceiling. The VAV terminals will regulate the primary air for space cooling and provide space heating. Each VAV terminal will also have a bi-polar ionization system for air purification. Each air handling unit will be provided with an air-side economizer cycle, for when the outdoor temperature is low enough to provide cooling to the building.

Ventilation air for the academic wing will be provided by rooftop dedicated outdoor air systems (DOAS), which will supply pre-conditioned outdoor air directly into the space and provide building exhaust. The DOAS units have hot water and chilled water coils to condition 100% outdoor air. Under normal operating conditions, air from the DOAS will be introduced to the space at 55°F to reduce the cooling load in the space. When all rooms require heat, the DOAS will introduce the ventilation air to the space at neutral conditions. The DOAS will be equipped with an energy recovery wheel and separate exhaust fan section. With the energy recovery wheel, the unit will recover energy from building exhaust air to precondition the outdoor air entering the unit. The DOAS will have bypass dampers that will allow the re-circulation of indoor air when the building is unoccupied.

The new academic wing will have a total of (6) rooftop air handling units for temperature control, (3) per floor. The academic wing will have a total of (2) rooftop DOAS units, (1) per floor.

Ensemble and Choral Addition:

The Ensemble and Choral addition will be connected to the existing rooftop VAV unit RTU-G. (This unit currently serves the existing fine arts wing.) The rooftop unit will have its airflow and capacity increased to accommodate the addition.

Each control zone in the addition will have a parallel, fan powered VAV terminal with hot water heat installed above the ceiling. Each VAV terminal will also have a bi-polar ionization system for air purification. The control zones will be as follow:

- Ensemble
- Ensemble Office
- Choral
- Choral Office
- Practice Rooms (combined on a single VAV terminal)
- New entrance corridor

Data Rooms:

The data rooms will be conditioned with a ductless split system. Each data room will have a temperature sensor to allow the building management system to monitor the space temperature and set up high temperature alarms.

Central Plant and Pipe Distribution System Upgrades:

1. Chiller Plant:

A new 260 ton chiller water-cooled chiller and a 445 gpm chiller/distribution pump will be added to the central plant. The chiller and pump will be piped to work with the existing (2) chillers in the variable primary chiller plant. The new chiller and pump will be added into the controls sequence for operation in a Lead, Lag-1, and Lag-2 configuration.

A new 750 gpm cooling tower will be installed in the existing cooling tower yard. A new 750 gpm condenser/cooling tower pump will be installed in the mechanical room. The new cooling tower and pump will be added into the controls sequence for operation in a Lead, Lag-1, and Lag-2 configuration.

2. Boilers:

A new 3500 Mbh input boiler, including a new boiler pump, will be added to the heating plant. The new boiler will be added into the controls sequence for operation in a Lead, Lag-1, and Lag-2 configuration.

Building Management System (BMS):

The HVAC equipment serving the new addition will be connected to the existing Trane building management system. The BMS will be upgraded as necessary to accommodate the new building additions and the upgrades in the central plant. The control system shall be in accordance with Greenville County School standards and shall communicate with the school district's facilities front end controls.

Radon Vents/Fans:

A radon exhaust fan will be connected to the underground radon collection piping. The HVAC contract will include connecting to the underground radon piping at the building slab with 4" cast iron pipe. The piping will be routed through the roof. A radon fan will be connected to the radon pipe stack, above the roof level.

Plumbing:

Domestic Cold & Hot Water:

The domestic cold water and hot water piping serving the additions will be connected to the existing domestic hot and cold water mains in the building.

If there are any questions about the systems described above, please let us know.

Sincerely,

A handwritten signature in black ink that reads "Shane Bulman". The signature is written in a cursive style with a large initial "S".

Shane Bulman