

# DESIGN ENGINEER'S PUNCHLIST

## Project Delivery Method:

- Design-Build (D-B)
- Construction Management @ Risk (CM with GMP)
- Design-Bid-Build (D-B-B)
- Construction Management at Risk

## Owner Team:

- Owner Representative (consultant)
- Project Manager of Capital Projects
- Facility Manager (outsource staff)
- College President

## Project Delivery Team:

- HVAC Engineer (lead consultant)
- Architect, Acoustical, Plumbing, Electrical, Structural, Fire Protection, and Security Consultants
- Third-Party Commissioning Consultant (CxC)
- Third-Party TAB Testing, Adjusting, and Balancing (TAB) Technician

## HVAC Project Team:

- General Contractor Project Manager
- Mechanical-Electrical Coordinator
- Architect and Sub-Consultants
- BAS Contractor

## Application 2019 ASHRAE Handbook:

- Retail Facilities, Chapter 2
- Commercial and Public Buildings, Chapter 3
- Educational Facilities, Chapter 8
- Power Plants, Chapter 28

## Systems and Equipment 2020 ASHRAE Handbook:

- HVAC System Analysis and Selection, Chapter 1
- Central Cooling and Heating Plants, Chapter 3
- Boilers, Chapter 32
- Furnaces, Chapter 33

## Project Type:

- New Infrastructure (central heating)
- Addition
- Renovation
- Energy Retrofit

## References:

- 2017 ASHRAE Handbook – Fundamentals
- 2019 ASHRAE Handbook – HVAC Applications
- 2020 ASHRAE Handbook – HVAC Systems and Equipment
- ASHRAE Standard 202, Commissioning Process for Buildings and Systems

## DESIGN INTENT DOCUMENT (DID)

### HVAC Design Intent:

The HVAC System Selection and Design Intent Is Based on the Process Outlined in ASHRAE Handbook 2020, Chapter 1, HVAC System Analysis and Selection, and includes the following:

- Owner's Building Program Goals and Additional Goals
- Finalized System Selection shall be Decentralized HVAC Systems and Terminal
- Budget Goals: First Cost and Operating Cost
- Timeline Goals: Summer Installation, Balancing, and Commissioning Due Dates
- Available Utilities: Natural Gas, Electricity, Hot Water Heating, and BAS

## BASIS OF DESIGN (BofD) DOCUMENT

- The HVAC Design Criteria Shall Be In-Sync with the Project Delivery Method and Owner's Building Program Requirements
- The Design Criteria Shall Be Based on ASHRAE 60.2 and Federal Energy Code Compliance for Outdoor Air Temperature Compliance
- Utilities Shall Be the Existing Electrical 480/3/60 Power and Natural Gas Service to Serve the New Gas-Fired, 200-Boiler Horsepower (BHP) Boiler No. 1 to Serve an Existing Three-Boiler Central Heating Plant within the Facility. This Boiler Replacement Project Is Phase 1 of a Three-Part Boiler Replacement Project Based on the College's Deferred Maintenance Master Plan
- The New Automatic Controls Shall Be Interfaced with the Existing BAS
- New Boiler System Sequence of Operation: the New Condensing, Highly Efficient Boiler will Become the Lead Boiler and Operate from Sept. 15 Through May 15. Existing Boiler No. 2 Shall Be the Lag Boiler with Boiler No. 3 to Become the Standby Boiler
- The HVAC Design Engineer Shall Include an Electrical Data Sheet to Coordinate with the Electrical Design Engineer, a Plumbing Data Sheet to Coordinate with the Plumbing Design Engineer, and Equipment and Distribution Weights to Coordinate with the Structural Design Engineer as well as DID to the Security Consultant