

## DESIGN ENGINEER'S PUNCLIST

### **Project Delivery Method:**

- Design-Build (D-B)
- Integrated Project Delivery (IPD)
- Construction Management @ Risk (CM) with Guaranteed Maximum Price (GMP)
- Design-Bid-Build (D-B-B)

### **Owner Team:**

- Building Owner
- Owner Representative (consultant)
- Project Manager of Capital Projects
- Facility Manager (in-house staff)

### **Project Delivery Team:**

- D-B Project Manager
- IPD Project Manager
- CM Project Manager
- Job Superintendent
- Mechanical-Electrical Coordinator
- HVAC, Plumbing, Electrical, Structural, Fire Protection, and Security Consultants

### **HVAC Project Team:**

- HVAC Contractor Project Manager
- Automatic Temperature Control (ATC) Technician (in-house staff)
- O&M Technician (in-house staff)
- Third-Party Commissioning Consultant (Cx)C
- Testing, Adjusting, and Balancing (TAB) Technician

### **Application 2019 ASHRAE Handbook**

- Commercial and Public Buildings, Chapter 3
- Places of Assembly, Chapter 5
- Educational Facilities, Chapter 8
- Kitchen Ventilation, Chapter 34

### **Systems & Equipment 2020 ASHRAE Handbook**

- Air-Handling and Distribution, Chapter 4
- In-Room Terminal Systems, Chapter 5
- Radiant Heating and Cooling, Chapter 6
- Combined Heat and Power Systems, Chapter 7

### **Project Type:**

- New Construction
- Addition
- Renovation
- Infrastructure Replacement
- Tenant Fit-Out

### **References:**

- 2017 ASHRAE Handbook – Fundamentals
- 2018 ASHRAE Handbook – Refrigeration
- Refer to the Codes and Standards Located at the Back of Each ASHRAE Handbook for Additional Reference

**Other References:**

- ASHRAE GreenGuide: Design, Construction, and Operation of Sustainable Buildings
- ASHRAE Indoor-Air Quality Guide: Best Practice for Design, Construction, and Commissioning
- ASHRAE Design Guide for Dedicated Outdoor Air Systems
- ASHRAE Standard 202 (Commissioning Process for Buildings and Systems)

## DESIGN INTENT DOCUMENT (DID)

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 and Additional Goals
- Specialized Systems Shall Include Toilet Exhaust and Kitchen Exhaust

**Program & Project Goals:**

- Functional Goals: (Refer to Chapter 1, 2020 Handbook)
- Management Goals: Property Management and In-house Mechanical and Electrical Services

**Available Utilities:**

- Propane Gas, Electrical Power, Emergency Power, Low-Pressure Steam, and the BAS system

**Existing Conditions:**

- Central Air Systems: Supply Air and/or Return Air Cubic Feet Per Minute (cfm), General Exhaust, and Toilet Exhaust
- Heating System: Hot Water Heating
- Terminal Units: Variable Refrigerant Flow (VRF) Fan Coil Units
- Sheet Metal: Low Velocity and Galvanized Sheet Metal with Volume and Fire Dampers
- Pumps: Existing End Suction Primary/Secondary Pumping with a Variable Frequency Drive (VFD)

## DESIGN CRITERIA DOCUMENT

- The HVAC Design Criteria Shall Be in Sync with the Project Delivery Method and Owner's Project Requirements
- The Design Criteria Shall Be Based on ASHRAE 90.1 and State Energy Code Compliance for Outdoor Air Temperature Compliance
- Reuse Existing Utilities and Central Heating and Chilled Water Systems
- The New Automatic Controls Shall Be Interfaced with the Existing BAS System
- The Existing Central Air System Shall Be Replaced with a New 100% Outdoor Air Unit with Energy Recovery of the Cafeteria Exhaust that is not Kitchen Hood Exhaust
- The New Central Air System will Include MERV-7 Prefilters and a MERV-14 Final Filter on the Supply Air Side and MERV-14 Filters on the Energy Recovery Wheel Intake Side
- Existing Variable Air Volume (VAV) and Fan-Powered Air Terminals Shall Be Replaced with VAV Primary Air, Fan-Powered Air Terminals Operating to Provide Positive Space Pressure in the Cafeteria and Kitchen
- The IPD Project Manager Shall Provide System Flow Diagrams with these Documents (OPR, DID, and BOD) along with ATC Sequences of Operation
- The HVAC Design Engineer Shall Include an Electrical Data Sheet to Coordinate with the Facility Management Firm