☐ **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)
☐ Performance Contract (PC)

Owner Team:
☐ Building Owner
☐ Government Agency
☐ Owner Representative (consultant)
☐ Project Manager of Capital Projects
☐ Facility Manager (outsource staff)

Project Delivery Team:
☐ Design-Build (D-B) Project Manager
☐ Design-Bid-Build (D-B-B) Project Manager
☐ Job Superintendent
☐ Mechanical-Electrical Coordinator
☐ Architect, Acoustical, Plumbing, Electrical, Structural, Fire Protection, and Security Consultants

HVAC Project Team:
☐ HVAC Supervisor
☐ HVAC Refrigeration Technician Subcontractor
☐ Automatic Temperature Control (ATC) Technician (in-house staff)
☐ BAS Technician Subcontractor
☐ Operation and Maintenance (O&M) Technician (in-house staff)
☐ Third-Party Commissioning Consultant (CxC)

Application:
☐ Retail Facilities, Chapter 2
☐ Commercial and Public Buildings, Chapter 3
☐ Data Centers and Telecommunication Facilities, Chapter 20
☐ Kitchen Ventilation, Chapter 34

Project Type:
☐ New Construction
☐ Addition
☐ Renovation
☐ Shell and Core
☐ Infrastructure (existing central heating and cooling)
☐ Tenant Fit-Out

References:
☐ 2017 ASHRAE Handbook – Fundamentals
☐ 2020 ASHRAE Handbook – HVAC Systems and Equipment
☐ Refer to the Codes & Standards Located at the Back of Each ASHRAE Handbook for Additional Reference Information

Other References:
☐ ACGIH - Industrial Ventilation: A Manual of Recommended Practice for Design, 28th Edition
☐ ASHRAE GreenGuide: Design, Construction, and Operation of Sustainable Buildings
☐ ASHRAE Geothermal Heating and Cooling: Design of Ground-Source Heat Pump Systems
☐ ASHRAE Humidity Control Design Guide for Commercial & Institutional Buildings
☐ ASHRAE Standard 62.1 - IAQ
☐ ASHRAE Standard 90.1 - Minimum Energy Standards
☐ ASHRAE Standard 202 - Commissioning Process for Buildings & Systems

DESIGN INTENT DOCUMENT (DID)

The HVAC System Selection and Design Intent Are Based on the Process Outlined in ASHRAE Handbook 2020, Chapter 1, "HVAC System Analysis and Selection," and Include the Following:
☐ Owner Building Program Goals and Additional Goals
☐ System Constraints and Constructability Constraints
☐ Finalized System Selection Shall be Decentralized HVAC Systems and Terminal Fan Coil Units (FCUs)
☐ Central Plant Heating and Central Plant Air-Conditioning

Program & Project Goals:

☐ Functional Goals: (refer to Chapter 1, 2020 Handbook)
☐ Budget Goals: Operating Cost, and Life Cycle Cost
☐ Timeline Goal(s): Occupancy Due Date, Prepurchased Equipment Date, Phased Construction Date, and/or Shell & Core Dates
☐ Management Goals: Property Management, Outsource Mechanical & Electrical Services and Primary Equipment Service Contracts

Utility Availabilities:

☐ Gas (propane), Electrical Power, and BAS system
☐ Emergency Power, Low-Pressure Steam (LPS) and Condensate Return, Hot Water Heating, and Chilled Water Cooling
☐ Heating Systems: Six Variable Refrigerant Flow (VRF) Heat Recovery Systems
☐ Air Conditioning Systems: Six VRF Heat Recovery Systems
☐ Outdoor Air Ventilation Systems: Three Dedicated Outdoor Air Systems (DOAS) with Minimum Outdoor Air to 100% Outside Air, Energy Recovery (Air–to-Air) Wheel, Electric Humidifier, VRF Heating and Cooling, and Variable Air Volume (VAV)

Terminal Units Distribution:

☐ VRF FCUs and VAV
☐ Cabinet Unit Heaters at the Entrances
☐ Sheet Metal: Low-Velocity and Medium-Velocity Sheet Metal (galvanized and black iron for kitchen exhaust) Sealed and/or Welded, Cleanouts
☐ Volume Dampers, Fire Dampers, Smoke Dampers, Barometric Dampers, Motorized, Gravity, and/or Air Blender
☐ Exhaust Fans: Centrifugal (forward curve and/or backward curve) and Up-Blast Type

DESIGN CRITERIA DOCUMENT

☐ The HVAC Design Criteria Shall Be in Sync with the Project Delivery Method and Owner's Building Program Requirements Noted Above.
☐ The Design Criteria Shall Be based on ASHRAE 90.1 and State Energy Code Compliance for Outdoor Air Temperature Compliance.
☐ Utility Shall be Electrical Power to the VRF Heat Recovery Systems to Serve the New VRF FCU replacements at One FCU Per 800 Square Feet of Space Served.
☐ The New VRF Systems Shall Be Four 60-Ton Air-Cooled VRF Condenser/Compressors Heat Pump Systems