

Project Delivery Method:

- Design-Build
- Integrated Project Delivery
- Construction Management @ Risk
- Design-Bid-Build

Owner Team:

- Local School Agency
- Building Program Committee
- Owner or Internal Owner Representative
- Owner Representative (consultant)
- Project Manager of Capital Projects
- Facility Manager (in-house staff)
- Facility Manager (out-source staff)

Project Delivery Team:

- Design-Build Project Manager
- Integrated Project Delivery Project Manager
- Construction Management Project Manager
- Job Superintendent
- Mechanical-Electrical Coordinator

HVAC Project Team:

- HVAC Supervisor (in-house staff)
- HVAC Supervisor (subcontractor)
- ATC Technician (in-house staff)
- ATC Technician (subcontractor)
- O&M Technician (in-house staff)

OWNER'S PROGRAM REQUIREMENTS (OPR)

Application:

- Places of Assembly, Chapter 5
- Hotel, Motel, and Dormitories, Chapter 7
- Educational Facilities, Chapter 8
- Laboratories, Chapter 17

Project Type:

- New Construction
- Addition
- Renovation
- Infrastructure (central heating, cooling, and ventilating)
- Utility Rebate

References:

- 2017 ASHRAE Handbook – Fundamentals
- 2019 ASHRAE Handbook – HVAC Applications
- 2020 ASHRAE Handbook – HVAC Systems and Equipment
- Refer to "Codes and Standards" (back of each ASHRAE Handbook for additional reference)

Other References:

- ACGIH - Industrial Ventilation: A Manual of Recommended Practice for Design, 28th Edition
- ASHRAE GreenGuide: Design, Construction, and Operation of Sustainable Buildings
- ASHRAE Procedures for Commercial Building Energy Audits
- ASHRAE Geothermal Heating & Cooling: Design of Ground-Source Heat Pump Systems
- ASHRAE Design Guide for Cleanrooms: Fundamentals, Systems, and Performance
- ASHRAE Design Guide for Dedicated Outdoor Air Systems

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DESIGN INTENT DOCUMENT (DID)

HVAC Design Intent:

- Finalized System Selection Shall Be Decentralized HVAC Systems and Terminal
- Specialized Systems Shall Include General Exhaust, Kitchen Exhaust, and Smoke Exhaust
- The HVAC System Selection and Design Intent Is Based on the Processed Outlined in ASHRAE Handbook 2020, Chapter 1, HVAC System Analysis and Selection
- Utility Availabilities
- Central Chilled Water
- Electrical Power and Emergency Power
- Existing Conditions: Through-the-Wall Unit Ventilators with Electric Heat and 2-Pipe Chilled Water System General Exhaust and Toilet Exhaust
- Hot Water Baseboard Radiation Heating System
- One DOAS Unit with VRF Cooling and Heat Recovery Heating with Tempered 100% Outdoor Air and an Energy Recovery Wheel

DESIGN CRITERIA DOCUMENT

- The HVAC Design Criteria Shall Be in Sync with the Project Delivery Method and the Owner's Aforementioned Building Program Requirements
- The Design Criteria Shall Be Based on ASHRAE 90.1 and State Energy Code Compliance for Outdoor Air Temperature Compliance
- The Utility Shall Be Natural Gas to Serve the New Central Boiler Plant that Shall Serve Three Firetube Hot Water Boilers. Sizes Include Two 800 Boiler Horsepower (BHP) Units Each Sized at Two-Thirds Capacity and One 200 BHP Intended to Be a Standby for These Two Boilers Plus to Operate During the Air Conditioning Season
- The New Central Plant Hot Water System Shall Be Primary Pump-Secondary Pumps Serving the Boilers and Heat Exchangers
- The Pipe Distribution Shall Be Standard Underground Distribution to a New VRF FCU Pump with VFDs Within Each Classroom
- The Utility Shall Be Electrical Power to the VRF Heat Recovery Systems to Serve the New VRF FCU Replacements for the Existing 2-Pipe Chilled Water System and its Supplemental Electric Heating Coils
- The New Automatic Controls Shall Be Interfaced with the Existing Building Automation System (BAS)