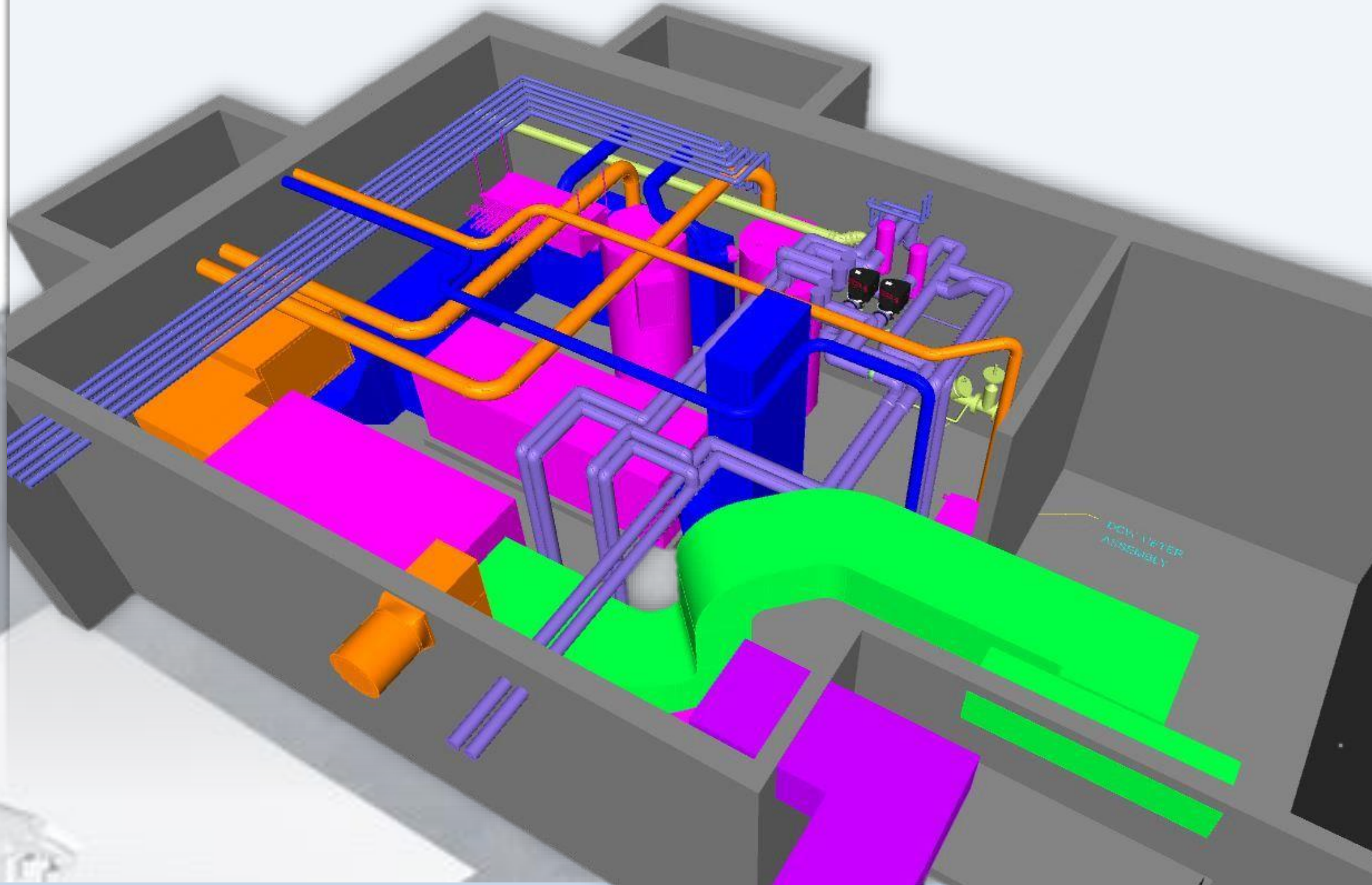


# FENN

Phased Mechanical, Plumbing and Fire Protection Renovation

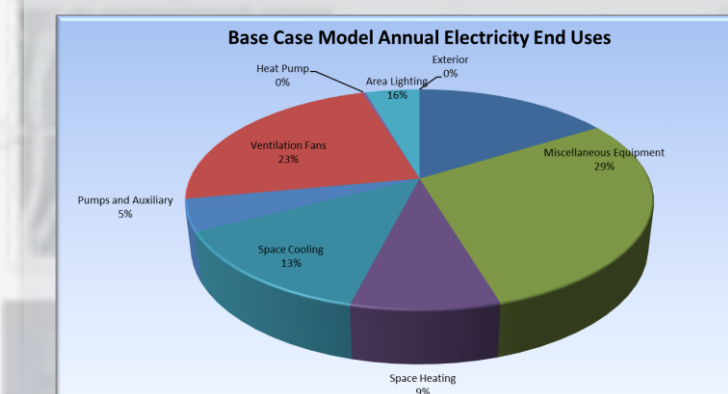
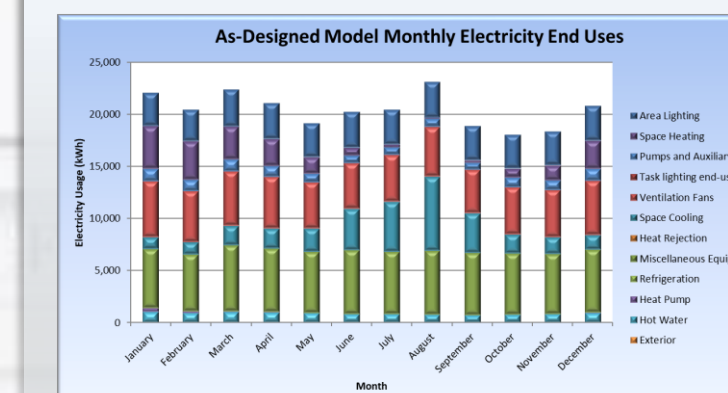
## 3D Visualization Capabilities



- Navisworks was used to ensure a clash-free fit of all mechanical, plumbing and fire protection services prior to construction.

## Load Calculations & Energy Modeling

Cooling Coil Peak		Heating Coil Peak		Variable Refrigerant Flow	
Area	Peak	Area	Peak	Area	Peak
1000	1000	1000	1000	1000	1000
2000	2000	2000	2000	2000	2000
3000	3000	3000	3000	3000	3000
4000	4000	4000	4000	4000	4000
5000	5000	5000	5000	5000	5000
6000	6000	6000	6000	6000	6000
7000	7000	7000	7000	7000	7000
8000	8000	8000	8000	8000	8000
9000	9000	9000	9000	9000	9000
10000	10000	10000	10000	10000	10000



- HVAC load calculations were performed utilizing Trane Trace modeling software.
- Energy modeling was performed utilizing eQUEST to analyze economic impact between the based case and proposed HVAC systems.



Dining Hall

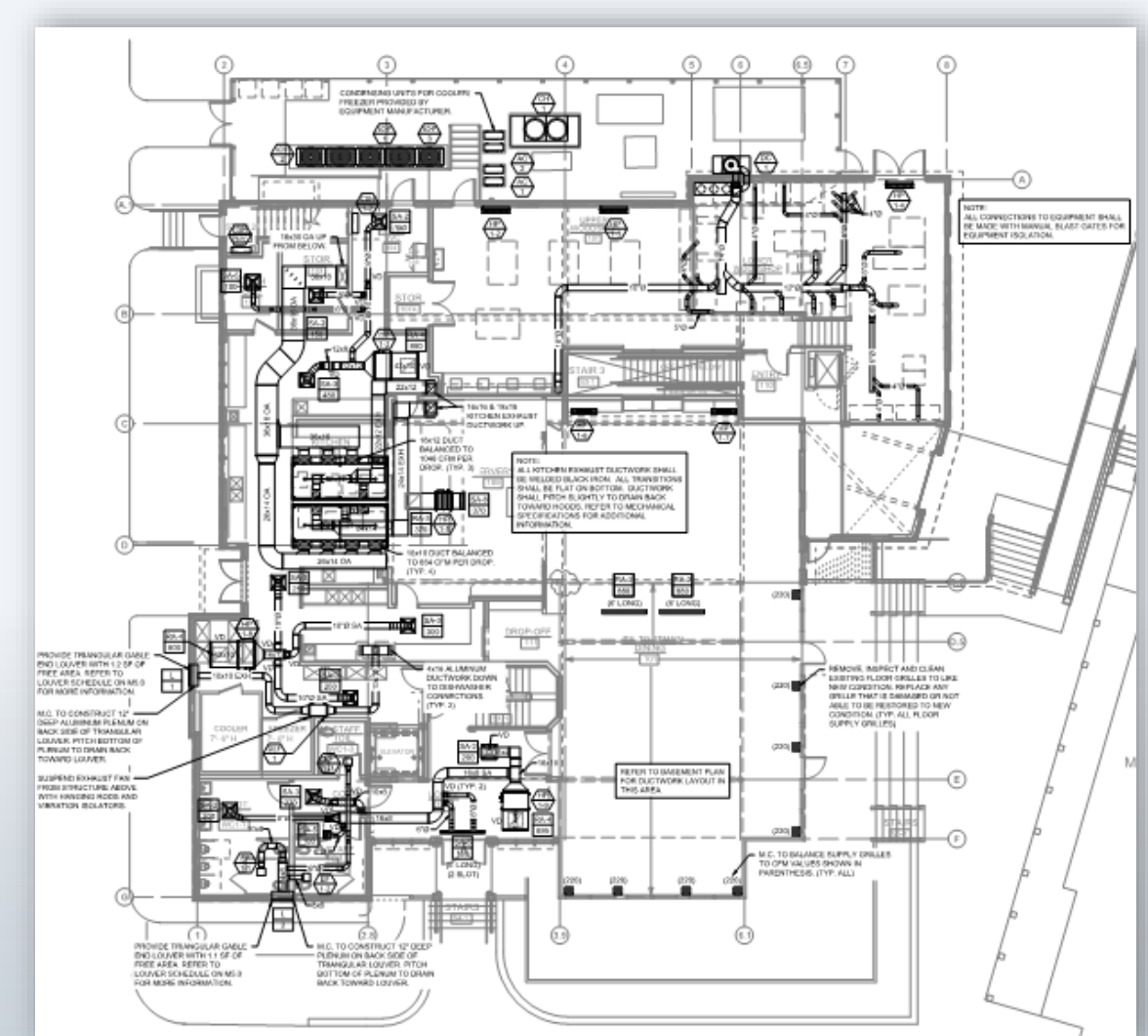
## Project Challenges

- Low structure and high ceilings left little room for conventional style HVAC systems making VRF a natural fit.
- Very limited room for exterior mounted equipment making space utilization and coordination with existing equipment a necessity
- The combination of the project being in a flood plain combined with a low basement slab elevation was mitigated due to the close coordination between the plumbing and civil engineers.

## Project Background

- New physical science labs, classrooms and expanded woodshop will be built around the existing dining hall. Many HVAC systems were considered such as geothermal heat pumps and chilled beams. Due to the budget and space constraints, a highly efficient VRF heat recovery heating and cooling system was designed along with a high efficiency gas fired hot water boiler and an air cooled chiller.

## Complete Design Documentation



- Complete constant volume energy recovery system design for code ventilation requirements.
- Complete hot water boiler and air cooled chiller hydronic system design.
- Ultra efficient VRF heat recovery system design.

## Complete Control Diagrams & Points Lists

Area	Control Point No.	Location	Unit	Description	Point Type	Control Point	Equipment	Capacity	Manufacturer	Notes
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000

- Complete piping and instrumentation diagrams along with control points lists were created for all major HVAC equipment.

Dining hall and physical science lab & classroom addition for prestigious private boys school.



B2Q Associates, Inc.  
100 Burr Road Suite 212  
Andover, MA 01810  
(978) 447-5601  
[www.b2qassociates.com](http://www.b2qassociates.com)