



The Sunshine Elementary School

Northeast, Pennsylvania

Nicholas Scheib | Senior Thesis Project | Mechanical Option

Project Information

Size: 103,000 ft²

Levels: 2

Construction Dates: March 2010-June 2011

Cost: \$16,559,000

Delivery Method: Design Build

Mechanical

An innovative design reducing energy by a predicted 47% according to an equest energy model. The design utilized three main components for such success:

- Ground coupled heat pump
- Heat recovery system
- Demand control ventilation

Structural

The substructure consists of concrete footings, columns and 4" slab on grade. The building consists of 12" load bearing masonry walls. K-series joists are used in some areas while in others 17 different heavy timber trusses were used to create the detailed roof line. In the gymnasium W8X13 beams were used horizontally to help with lateral loads and for wind bracing.

Project Team

Architect: Reese, Lower, Patrick and Scott

MEP: Reese Engineering

Structural: Zug and Associates

General Contractor: Warfel Construction Company

Architecture

The Elementary School was designed around a "school within a school" concept. The Kindergarten area is a smaller individually functioning part of the building surrounded by the 1st to 5th grade class rooms. This allows the youngest of the students to become acclimated to the school environment. Shared spaces such as the library, kitchen, nurse suite and building administration connect the two parts of the building.

Electrical

The power company delivers 12,470 V power to the building which is stepped down to 208/120 V power through a 1000 KVA transformer. Service then enters the north side of the building to a main electrical room. A 200KW, 208/120 V Emergency Generator is used to supply power for life safety systems.

The Pennsylvania State University

CPEP SITE - <http://www.engr.psu.edu/ae/thesis/portfolios/2011/nbs5022/index.html>