ELARA ENGINEERING

Big Picture Thinking. Practical Approach. Sustainable Design.

# Deerfield & Highland Park High Schools Master Plan Implementation

## Project Highlights and Results

- Innovative use of refrigerant based heating and cooling system (VRF) for energy efficient space conditioning that allows for simultaneous heating and cooling across the building spaces
- Building Information Modeling (BIM) 3D modeling software utilized for all design and construction documentation
- Phased over five years

## Project Background

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|---|---|
| Owner: | Township High School, District 113 |
| Location: | Deerfield, IL; Highland Park, IL |
| Team/Team Lead: | Steve Maze, Bob St. Mary, Claudine Harig, Bhupendra Tailor |
| Elara Role: | MEPFPIT Engineering |
| Type: | Renovation, New Construction |
| Construction Cost: | $114,000,000 |

## Project Overview

| | |
|---|---|
| Building Type: | K-12 |
| Building Attributes: | 1,000,000 SF; Classrooms, Labs, Offices, Athletic Facilities |
| Initial Construction: | 1959 Deerfield, HS; 1914 Highland Park HS |
| MEPFPIT Systems: | VRF, DOAS, FCUs, AHUs, Heat Recovery, Dehumidification, CHW/HW, DDC |

Design Architect: Perkins+Will
Photo by James Steinkamp

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## Innovation

**Pools**

- HVAC design capitalizes on outdoor air conditions and AHUs recover energy to precondition outdoor air to minimize dehumidification energy usage.
- Fabric duct system within the truss work provides more even and efficient air distribution.
- Lighting arrangement makes use of an indirect light truss to minimize glare/reflection.

**Gymnasiums**

- To address a wide variance in space occupancy/usage and increase operating efficiency, each gymnasium has two AHUs -- one sized to meet typical daily load and one required only during events where up to 2,000 people may occupy the space.

**Classroom Renovations**

- To add classroom air conditioning, the energy efficient VRF heating and cooling system installed condensing units within the building penthouse (ducted to the outdoors).
- To deliver a precise amount of ventilation air based on actual occupancy and to minimize over-ventilation of unoccupied spaces, the dedicated outdoor air systems (DOAS) were coupled with VRF.