MSBA Story of a Building
Embracing Change
Saugus Middle High School
Saugus, MA

May 25, 2022

HMFH

HMFH ARCHITECTS
Saugus Representatives

Scott Crabtree
Town Manager, Saugus, MA

Michael Hashem
HS Math Teacher, Saugus Middle High School
(Formerly Saugus HS Principal & Interim Superintendent)
Former Saugus MS & HS
HMFH Architects

Tina Stanislaski
AIA, LEED AP
Principal

Gary Brock
AIA, LEED BD+C,
Project Architect
Overview: Town Identity

• Strong sense of history and town pride

- DATE OF TOWN SETTLEMENT: 1629
- DATE OF TOWN INCORPORATION: 1815
- CURRENT POPULATION: 28,361
- TOTAL AREA: 11.8 sq mi
- DISTANCE FROM BOSTON: 10 mi
Overview:

- 10 miles from Boston along Route 1
Overview: Town History on Display
Process: Design Inspired by Local Environment and History
Process: Educational Planning & Project Goal Setting

- Consolidation of facilities
- Conserve resources
- Allow for flexibility
- Maximize return on investment
Fostering Social/Emotional Well-being

Process: Educational Planning Holistic Approaches
Saugus Middle High School:
1st LEED Platinum Certified MSBA Project

- Working with the community
- Establishing Goals
- Begins with a master plan for school district
What is LEED?
What is Sustainability?

Conserving resources for future generations... one project at a time
# Process: Sustainability Goals

<table>
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<tr>
<th>Health &amp; Well-being</th>
<th>Energy</th>
<th>Water</th>
<th>Waste</th>
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<tbody>
<tr>
<td><strong>GOALS</strong></td>
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<td>90% Regularly</td>
<td>Reduce consumption by 20% or more</td>
<td>35% Indoor Water Use Reduction</td>
<td>Comprehensive Composting program</td>
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<td>Occupied Spaces</td>
<td>Improve Energy Efficiency</td>
<td>Rainwater Harvesting</td>
<td>Kitchen Food Sorting</td>
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<td>have Access to</td>
<td>- Envelope Improvements</td>
<td>o Irrigation</td>
<td>Industrial Compost</td>
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<td>Daylight &amp; Views</td>
<td>- Energy Recovery</td>
<td>o Flushing</td>
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<td>Choose healthy</td>
<td>Improve Resiliency</td>
<td>Toilets &amp; Urinals</td>
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<td><strong>STRATEGIES</strong></td>
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<td>Well Planned Core Learning</td>
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<td>Good Acoustic Properties</td>
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Process: Charrettes/Brainstorming
Health  Sustainability Goals

- Material transparency
- Embodied carbon
- Daylighting
- Air quality
- Acoustics
**Health:** Community Resource

- Community Spaces
- Athletic facility and bike trails
Health: Indoor-Outdoor

- Tunable white light in Life Skills classrooms
- Outdoor classroom and green roof
Health: Daylighting

Design Process
Health: Daylighting

Measurements after Construction
Health: Air Quality

Displacement Ventilation

Ductless Fume Hood
Health: Acoustics

- Exterior material as buffer
- Interior partitions and flexibility
Health: Material

- Material transparency - Environmental Product Declarations, Health Product Declarations (EPD, HPD)
- Whole building life cycle analysis (LCA) - Embodied Carbon
- Optimizing material strengths for greatest efficiency
Energy Sustainability Goals

• Set EUI goals
• On-site generation
• Lowering carbon footprint
• All-electric building
• Net zero energy
• Net positive energy
Energy: Solar

PV Ready Locations

Solar Farm at Sagus Public Works
Energy: Efficiency

• Combined Heat and Power (CHP) - Tri-Gen includes cooling

• Resiliency:
  - CHP is also emergency backup
  - Abundant daylighting
  - Operable windows
Energy: Accommodating Electric Vehicles
Water Sustainability Goals

- Water use reduction
- Stormwater management
- Protection of local area
- On-site processing
Toilet and urinal flush landscape helps to clean, filter and store stormwater.

Three 30,000-gallon cisterns on site.

Condensation Collection
HVAC unit condensate pipes supplement water collection.

Supplied by municipal water

Rainwater Reuse
Toilet and urinal flush

Low Flow Fixtures

Irrigation
Entire site, including athletic fields

Condensation Collection
HVAC unit condensate pipes supplement water collection.

Rainwater Cistern
Three 30,000-gallon cisterns on site.

Rain Garden

Stormwater Runoff
Landscape helps to clean, filter and store stormwater.

Green Roof
Water: Site Water

- Clean stormwater
- Reduce rate of stormwater runoff
- Reduce heat island effect
- Bridges improve pedestrian safety
- Aesthetic benefits
Water: Stormwater Structures
Water: Rain Gardens
Water: Reuse

Stormwater reuse expected to save more than 1,500,000 gallons of water per year

= 12,000,000 16oz water bottles

To conserve drinking water, Saugus Middle High School uses reclaimed stormwater to flush our toilets. As a condition to permitting this innovative water conservation effort, state plumbing inspectors require the use of blue dye to easily identify the non-potable water.

Do not drink reclaimed water.
Waste Sustainability Goals

• Diversion rate, construction and occupancy
• Education around waste reduction
• Collaboration with community
• Stringent waste management
Waste: Construction Waste
Waste: Composting & Recycling

• On-site compactors
• Send compost to local farm

Composting diverts another 50% of trash from landfills for a variety of potential uses.

Separating liquids helps reduce weight of waste containers, leaky messes, and odors from wet materials.

When managed properly, recycled materials can become the ‘raw’ materials for other industries.

At schools, landfill is first reduced 50% by recycling. The remaining trash is further reduced 50% by composting. This saves landfill space, reduces incinerated waste, and saves money.
Waste: Innovative Equipment
Potential for Platinum

1. Building Master Plan
2. Open space & restoring habitat
3. Gender neutral toilet facilities
4. Demand response
5. COVID protocols
6. Bicycle parking
7. Housing density
Embracing Change: Lessons Learned

• Moving targets can be hit - plan to hit more than is needed

• Start early to integrate good sustainable practices

• Client may be more interested and supportive than initially expected

• Education of new occupants is still challenging
SAUGUS MIDDLE HIGH SCHOOL

DESIGN TEAM MEMBERS

Architect HMFH Architects
Civil Engineer Samiotes
Landscape Architect CSS
Structural Engineer Foley Buhl Roberts Associates
MEP/FP Engineer GGD Consulting Engineers
Technology Consultant GGD Consulting Engineers
FFE Consultant Point Line Space
Sustainability Consultant James Carr architecture + design
“When a student walks into this space, their expression says it all...the learning and exploring possibilities are limitless.”

- MYRA D. MONTO, ASSOCIATE PRINCIPAL, SAUGUS MIDDLE HIGH SCHOOL