

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

May 25, 2022

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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



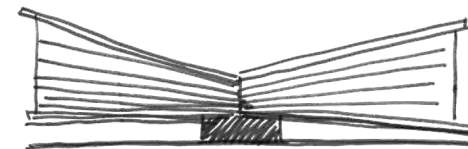
Gary Brock

AIA, LEED BD+C,

Project Architect

Overview: Town Identity

- Strong sense of history and town pride



Iron Works (bellows)

- 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



FACILITY SIZE:

- 271,000 SF

SITE SIZE:

- 21.75 acres

% ENERGY REDUCED FROM BENCHMARK:

- 26%

% REDUCTION IN ENERGY COSTS:

- 33%

CARBON REDUCTION:

- 48.7 tons/yr

CERTIFICATION:

- LEED Platinum

ENROLLMENT:

- 1,360 students

GRADES:

- 6-12

OF MIDDLE SCHOOL STUDENTS:

- 644

OF HIGH SCHOOL STUDENTS:

- 716

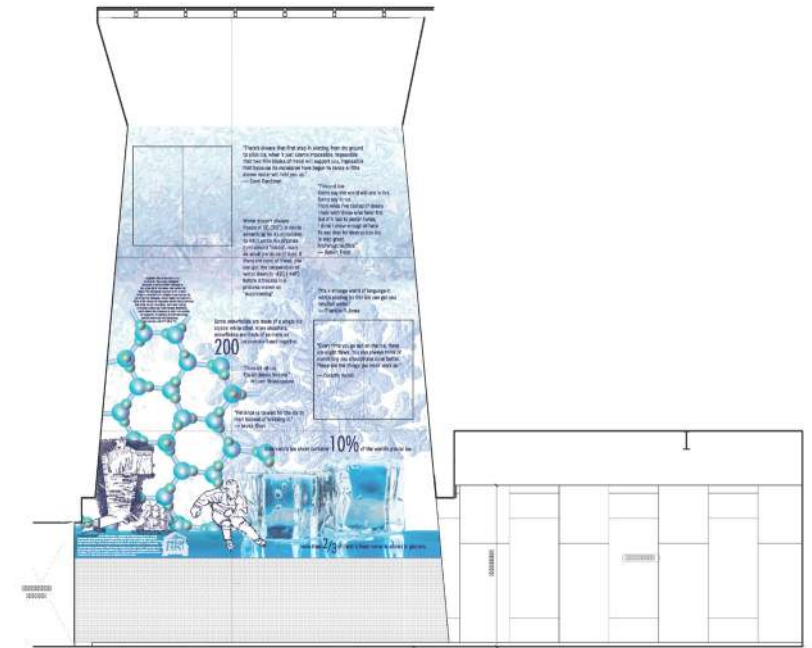
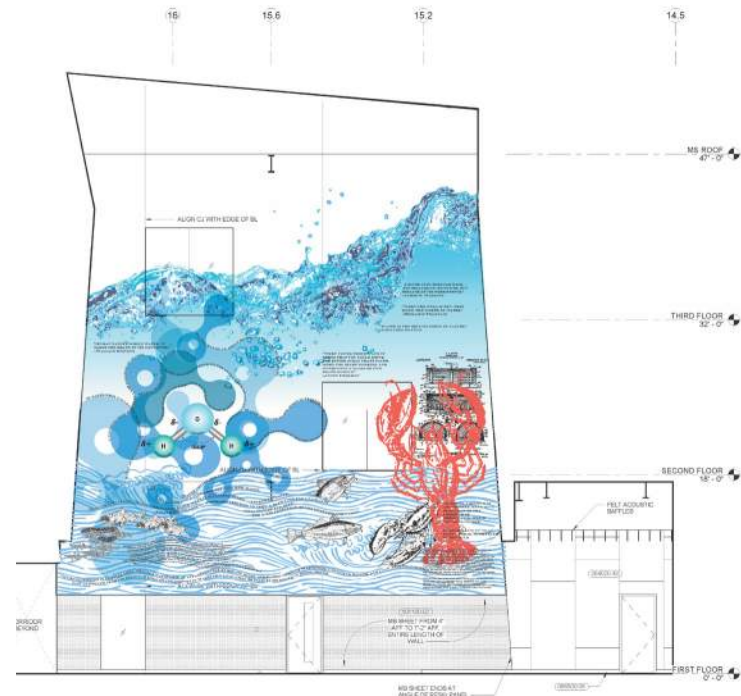
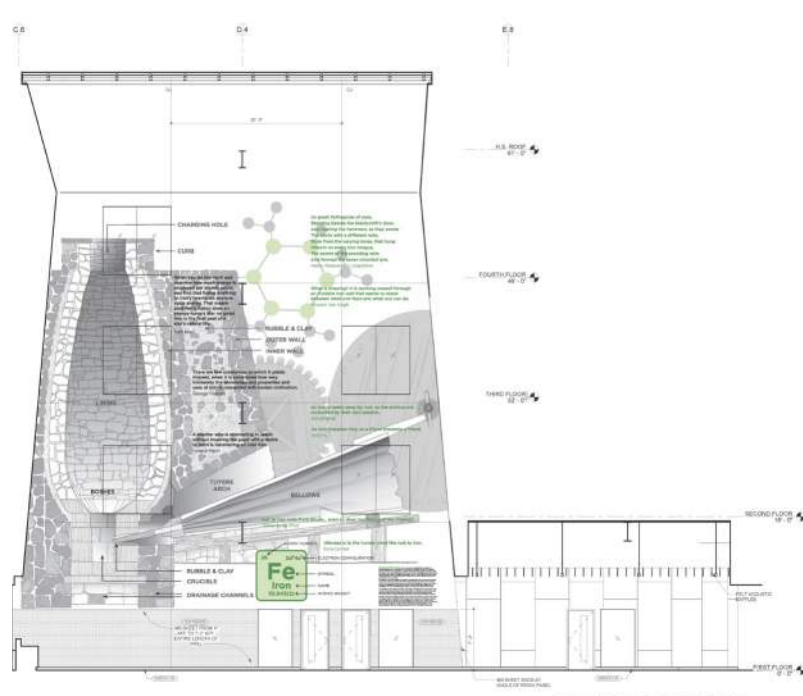
TOTAL PROJECT COST:

- \$140,205,976

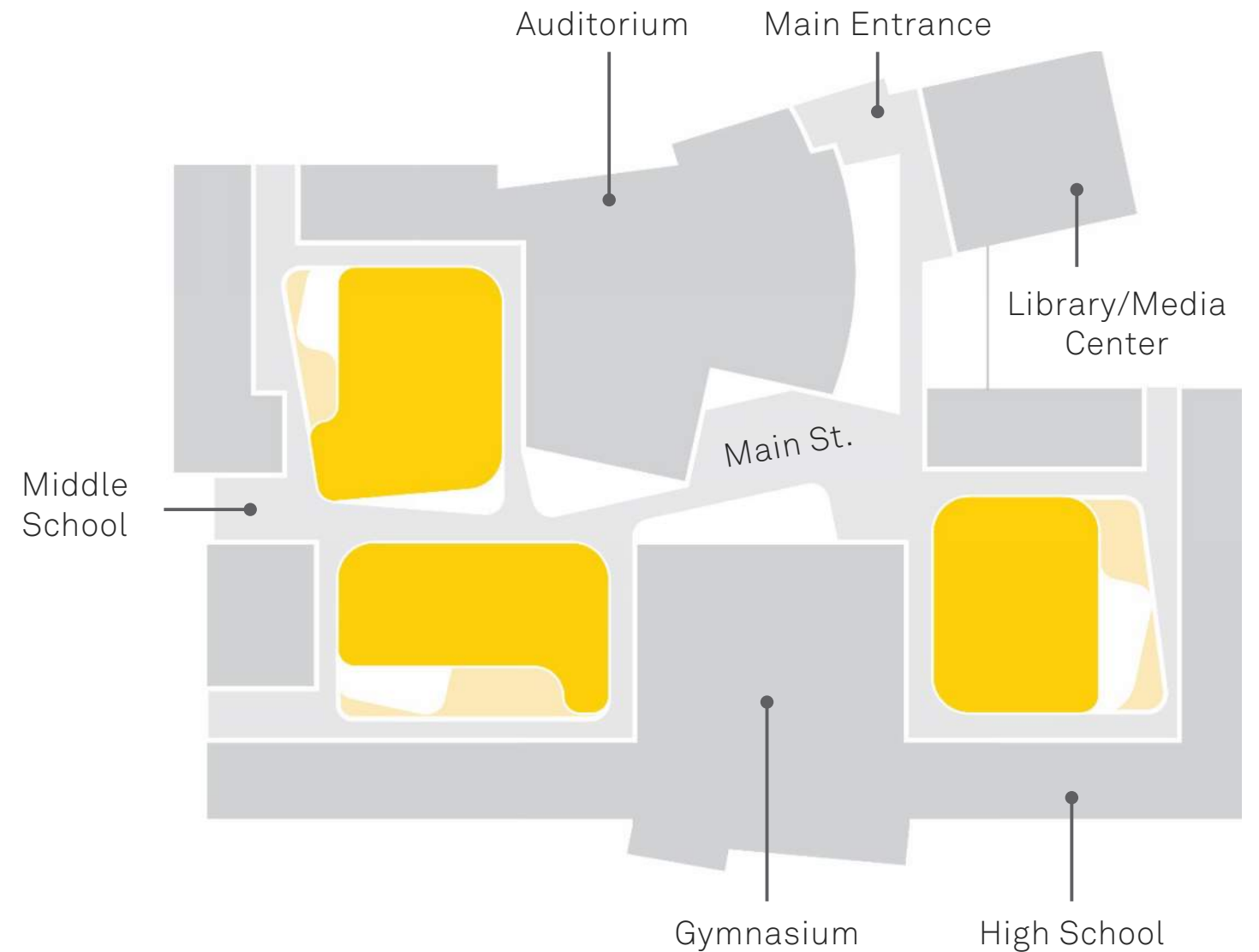
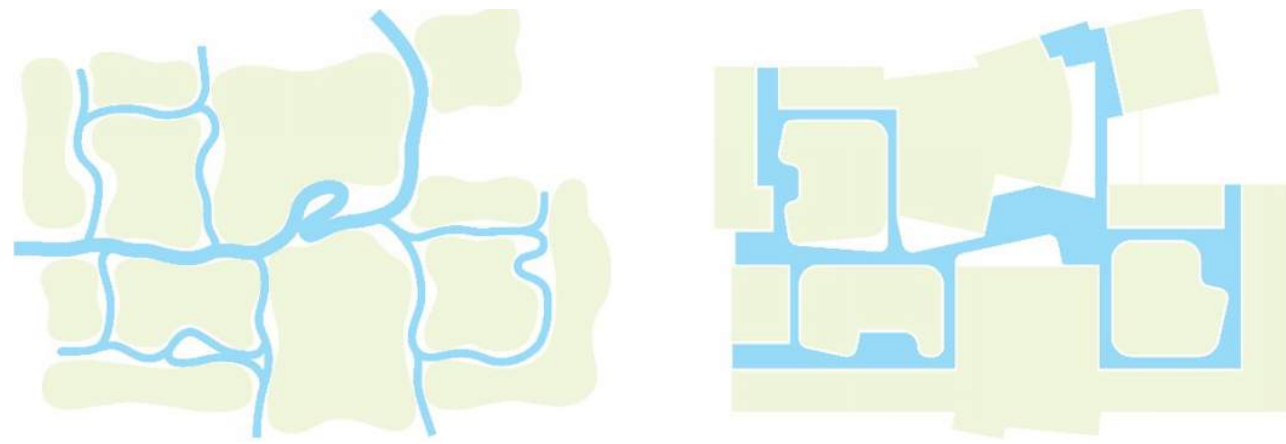
DATE OF OCCUPANCY:

- 08/01/2020

Overview: Town History on Display



Process: Design Inspired by Local Environment and History

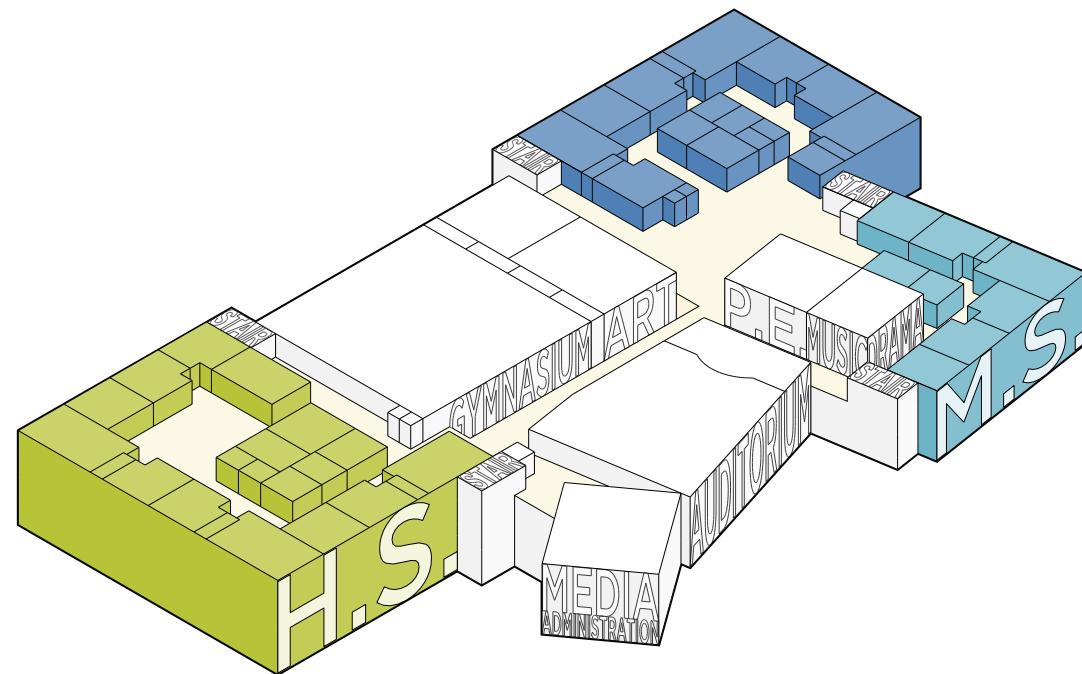


Process: Educational Planning & Project Goal Setting

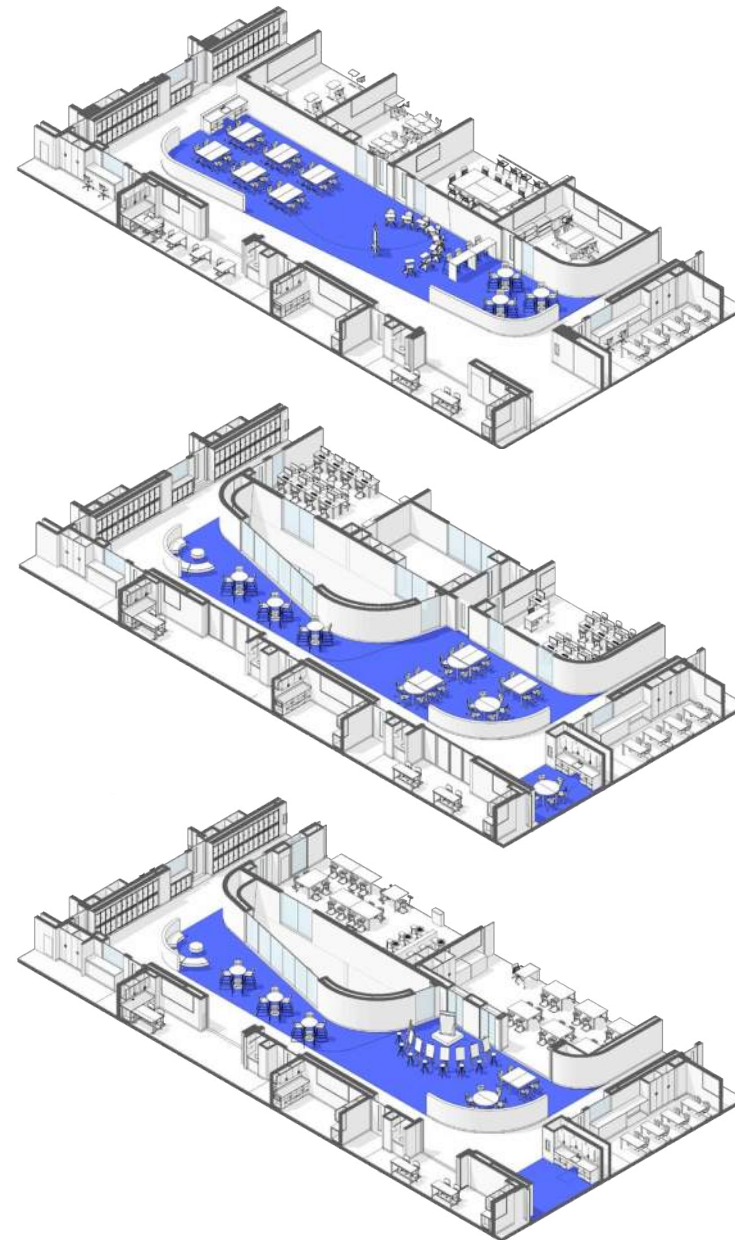
- Consolidation of facilities
- Conserve resources
- Allow for flexibility
- Maximize return on investment



Process: Educational Planning Holistic Approaches



Fostering Social/Emotional Well-being

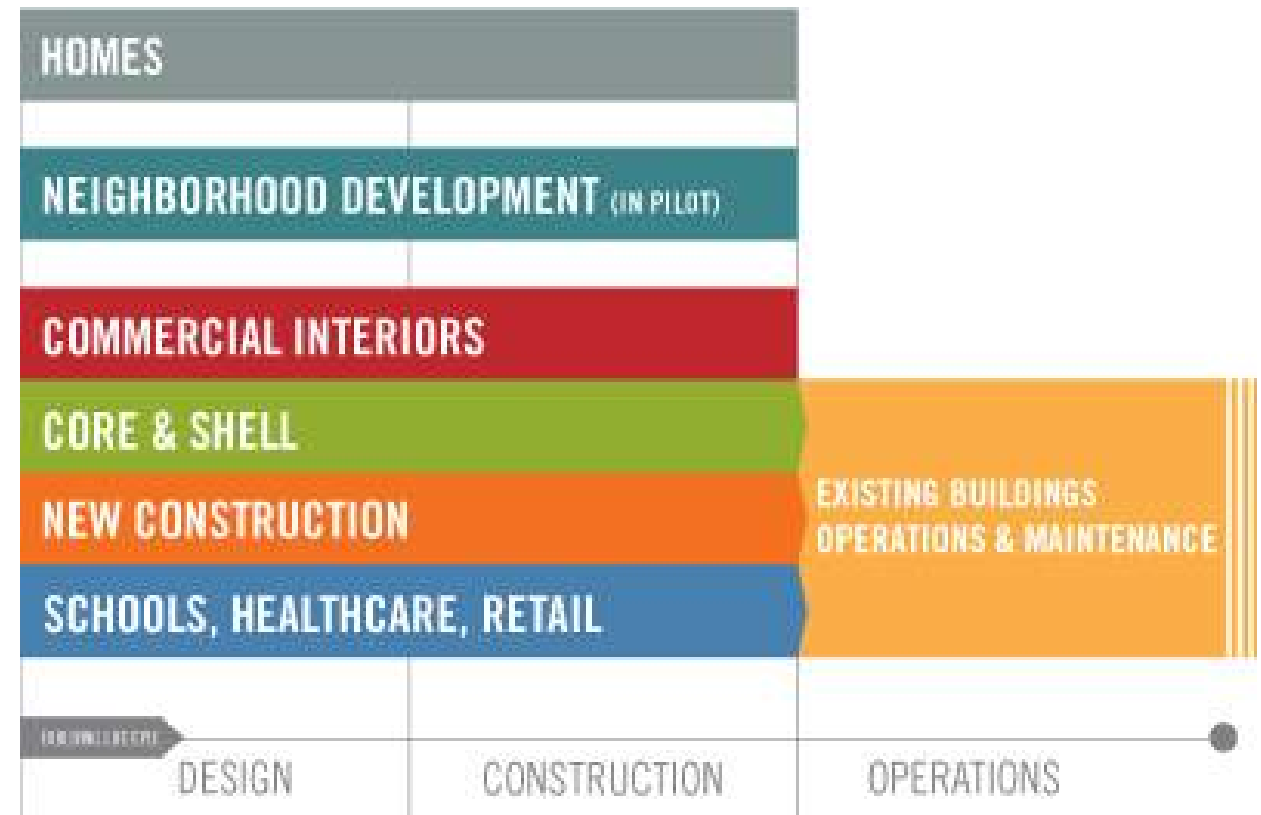
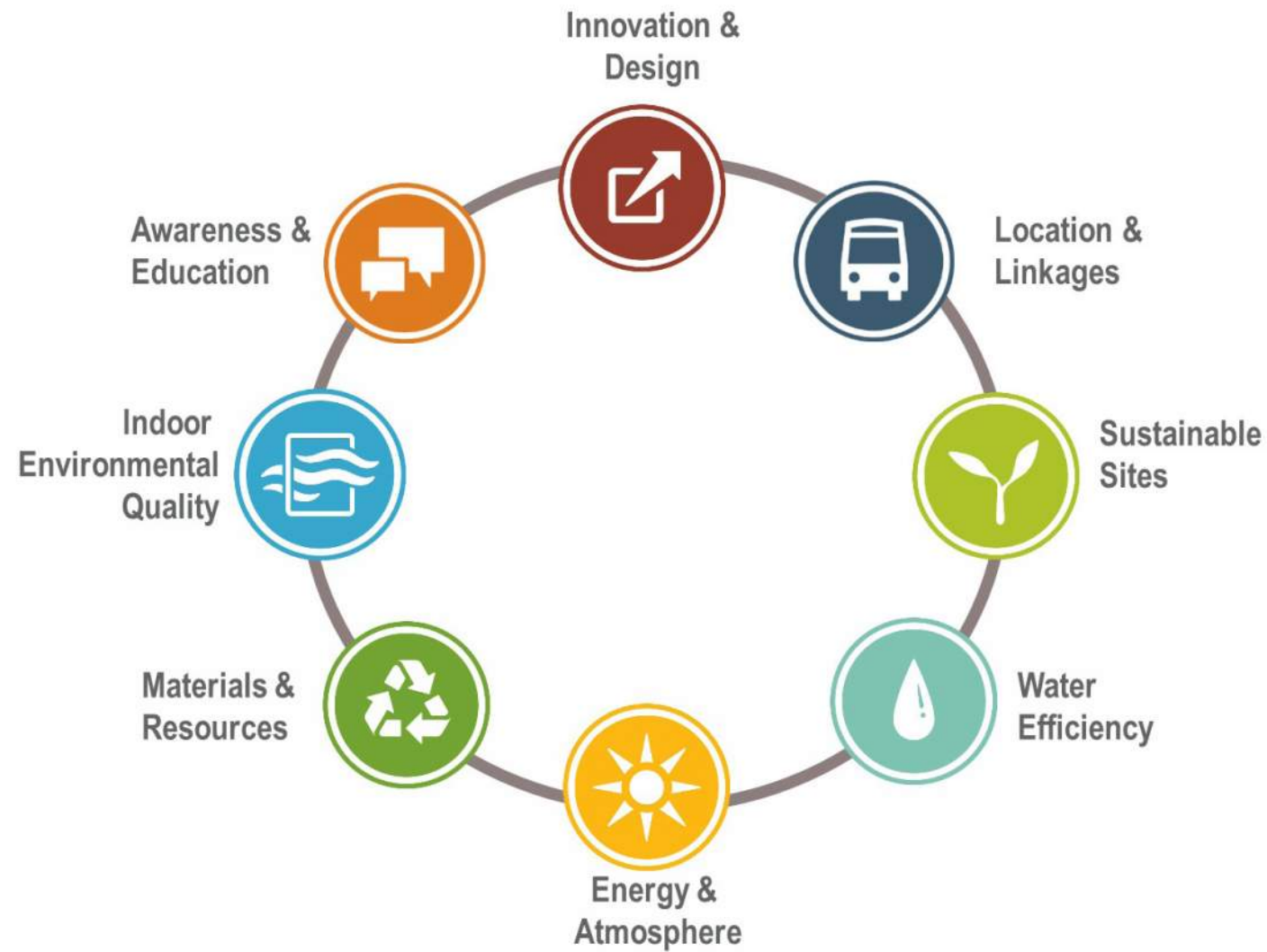


Saugus Middle High School: 1st LEED Platinum Certified MSBA Project

- Working with the community
- Establishing Goals
- Begins with a master plan for school district



What is LEED?



What is Sustainability?

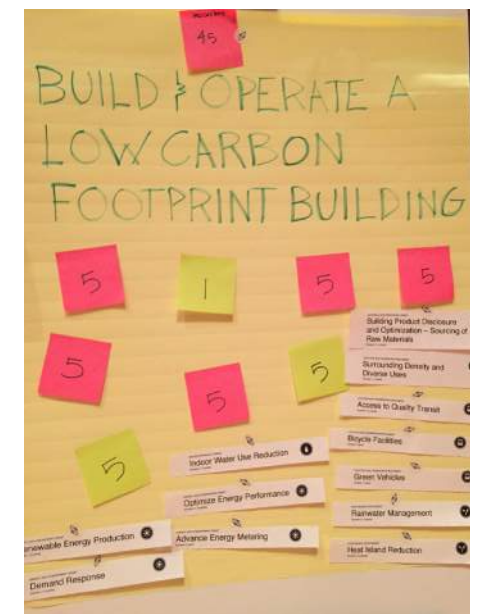
Conserving resources for future generations... one project at a time



Process: Sustainability Goals

	Health & Well-being	Energy	Water	Waste
GOALS	<p>90% Regularly Occupied Spaces have Access to Daylight & Views</p> <p>Choose healthy materials with transparency labels</p>	<p>Reduce consumption by 20% or more</p>	<p>35% Indoor Water Use Reduction</p>	<p>Comprehensive Composting program</p>
STRATEGIES	<p>Windows/Skylights/Clerestory</p> <p>Well Planned Core Learning</p> <p>Green Roofs</p> <p>Natural Materials</p> <p>Good Acoustic Properties</p> <p>Good IEQ</p>	<p>Improve Energy Efficiency</p> <ul style="list-style-type: none">○ Envelope Improvements○ Energy Recovery <p>Improve Resiliency</p>	<p>Rainwater Harvesting</p> <ul style="list-style-type: none">○ Irrigation○ Flushing Toilets & Urinals	<p>Kitchen Food Sorting</p> <p>Industrial Compost</p>

Process: Charrettes/Brainstorming



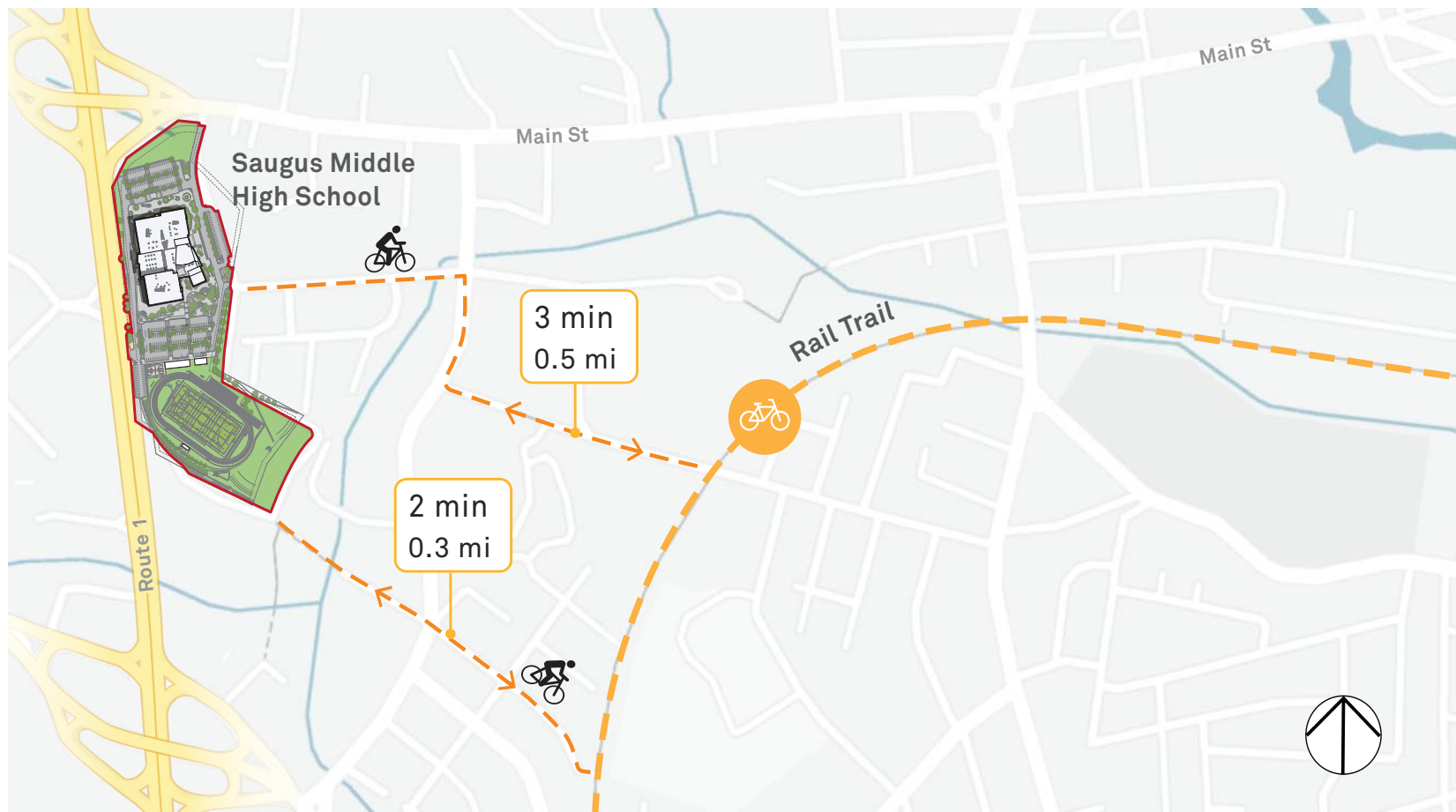
Health Sustainability Goals

- Material transparency
- Embodied carbon
- Daylighting
- Air quality
- Acoustics



Health: Community Resource

- Community Spaces
- Athletic facility and bike trails

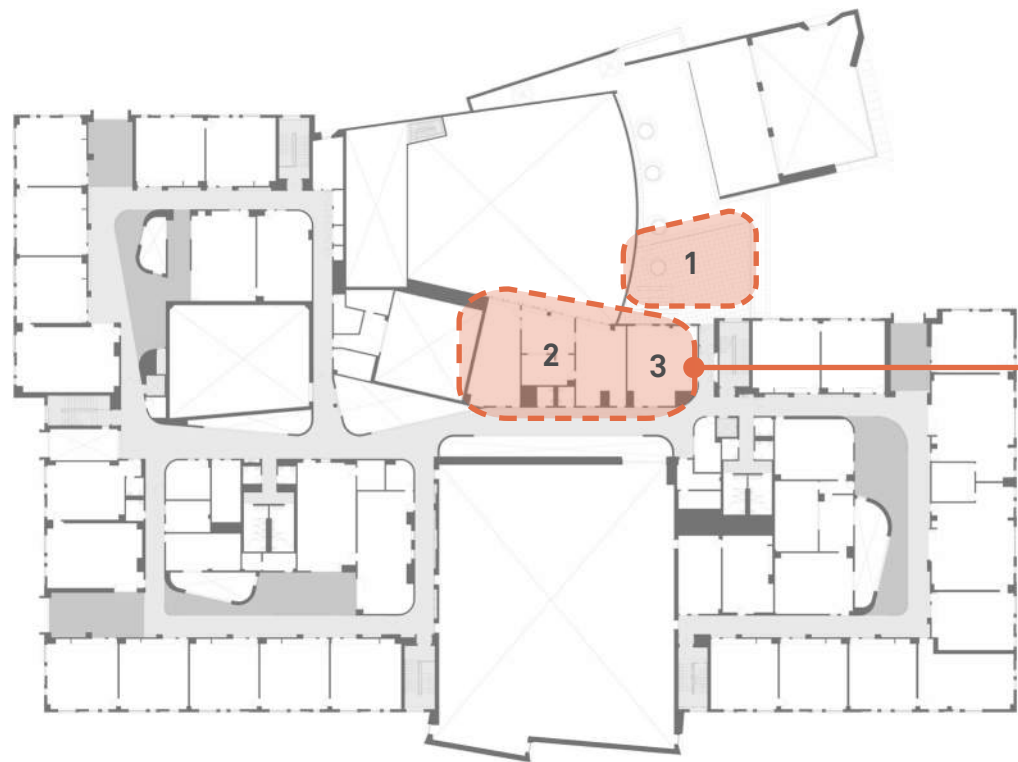


Health: Indoor-Outdoor

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



Boston Medical Center



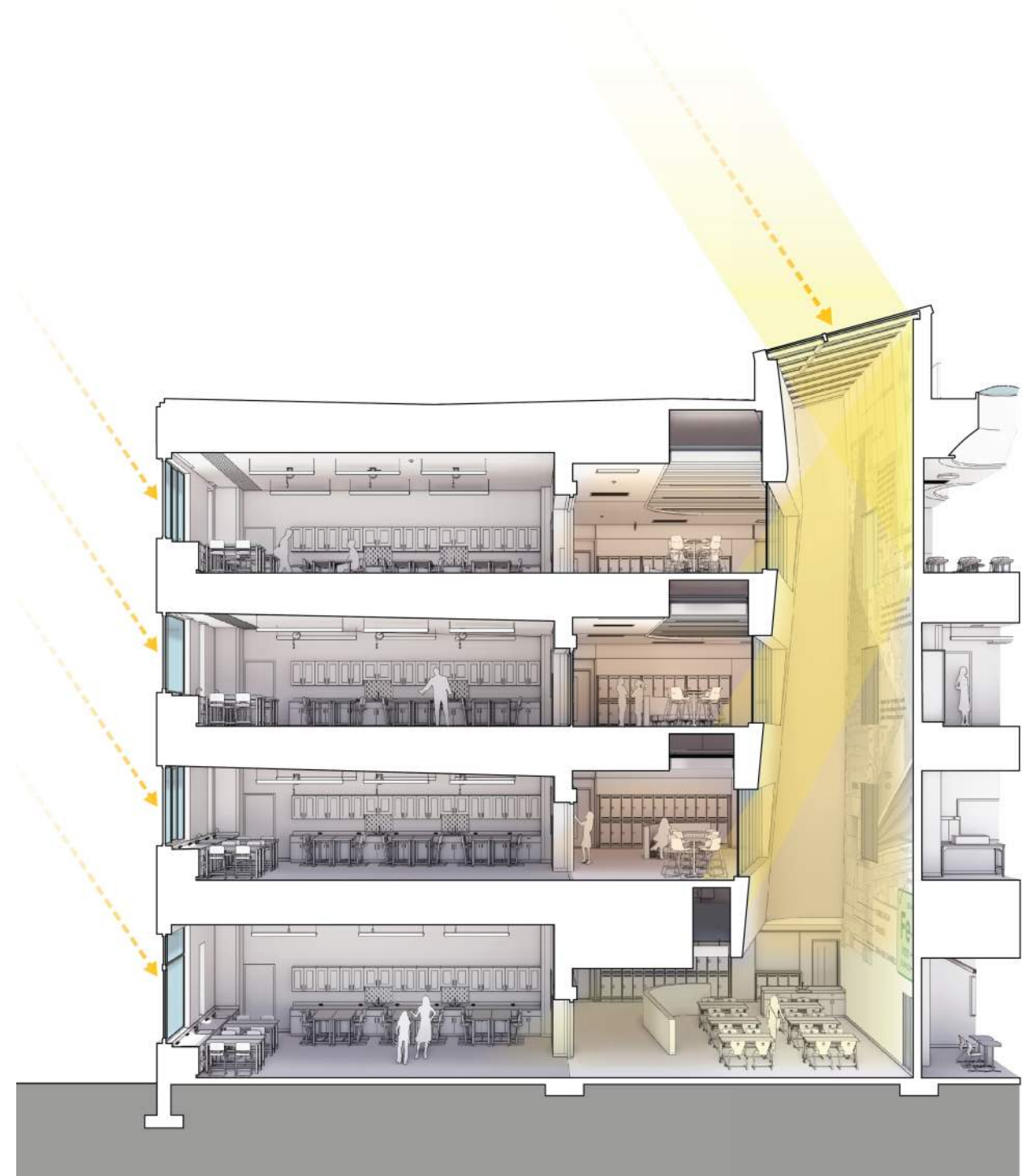
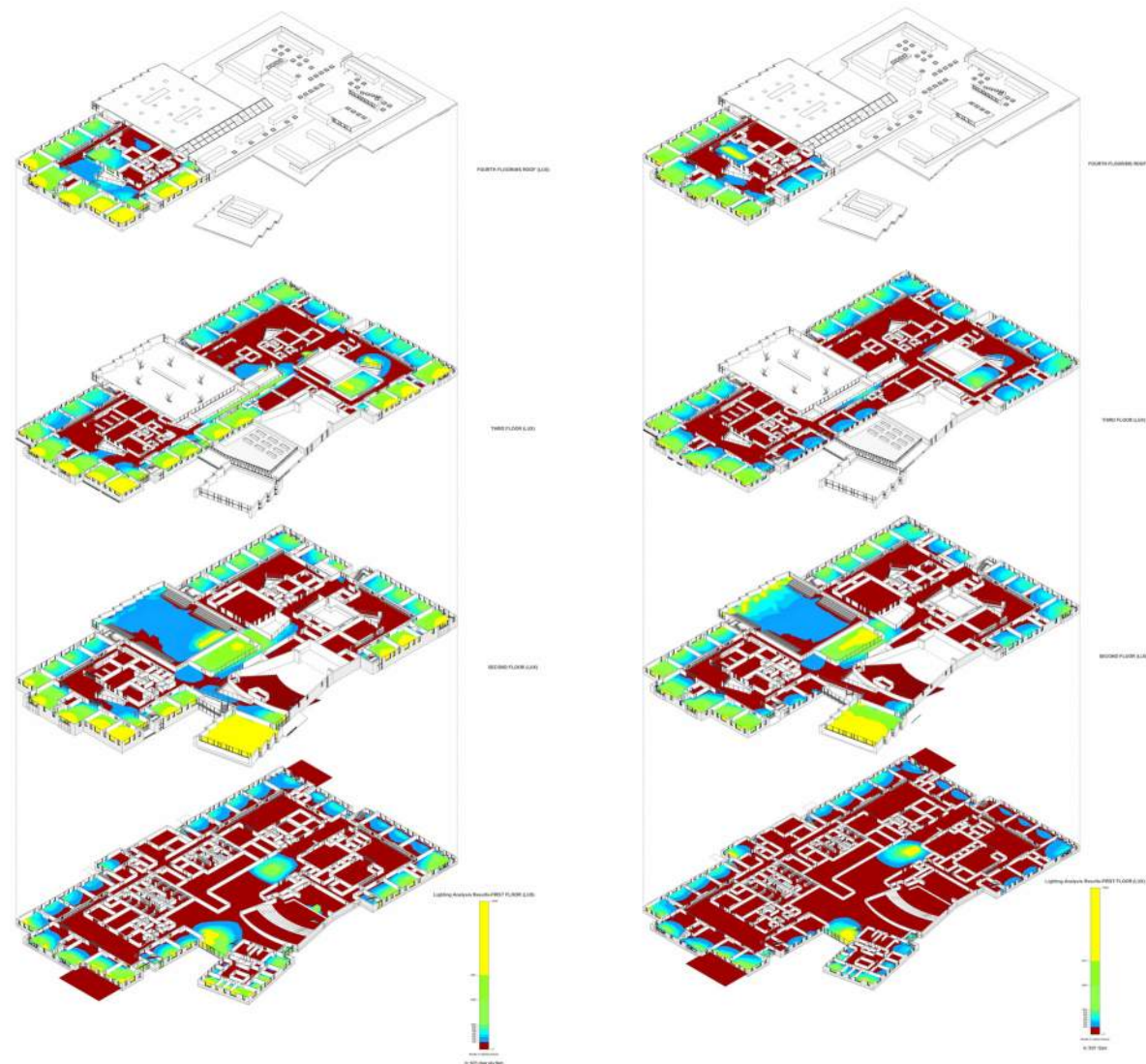
- 1 Outdoor classroom
- 2 Life skills
- 3 Medically fragile



Saugus Middle High School

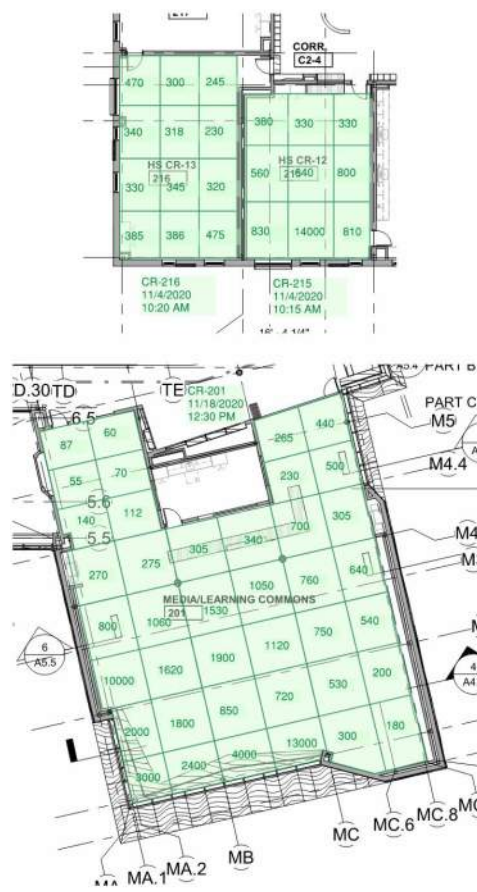
Health: Daylighting

Design Process

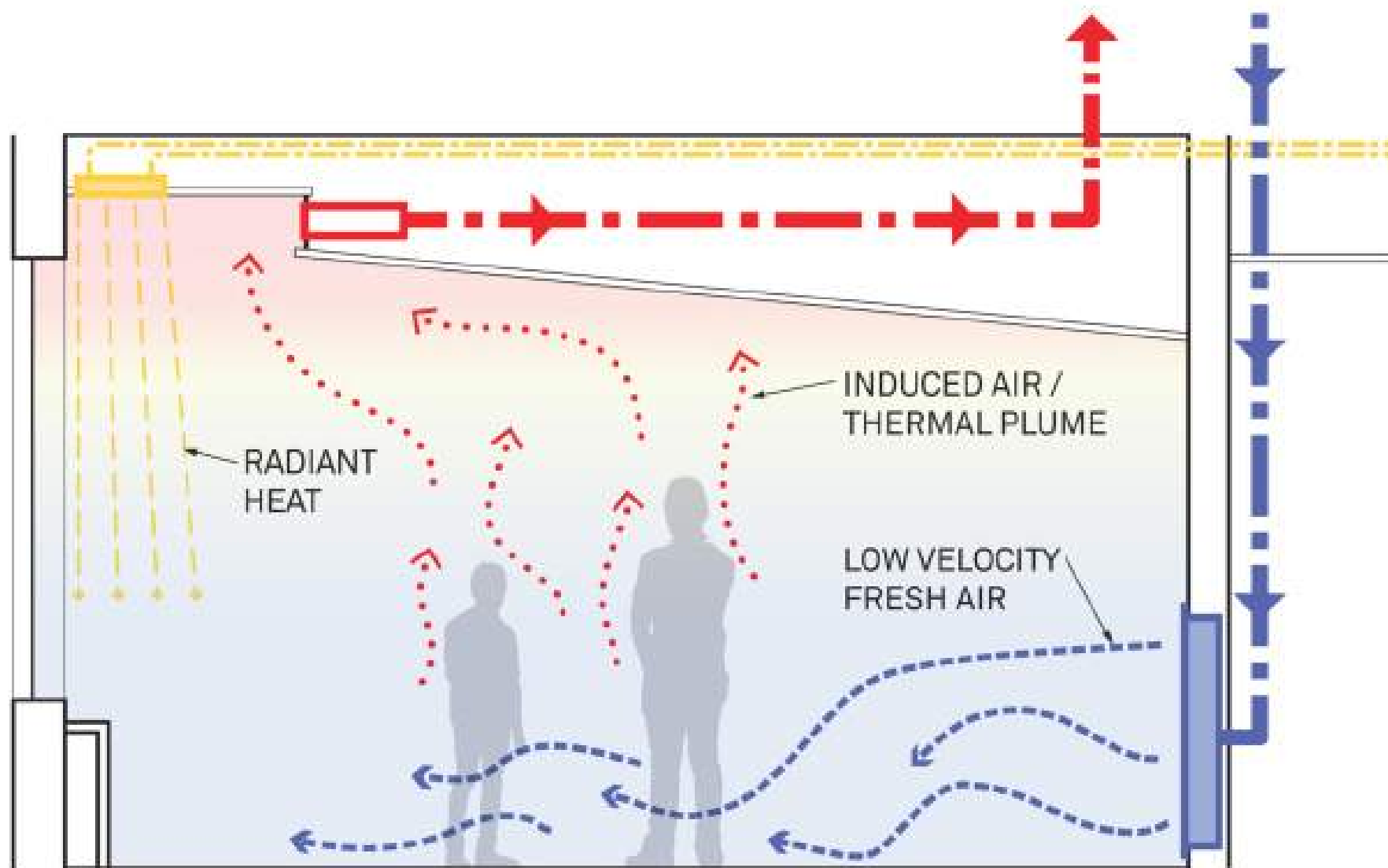


Health: Daylighting

Measurements after
Construction



Health: Air Quality



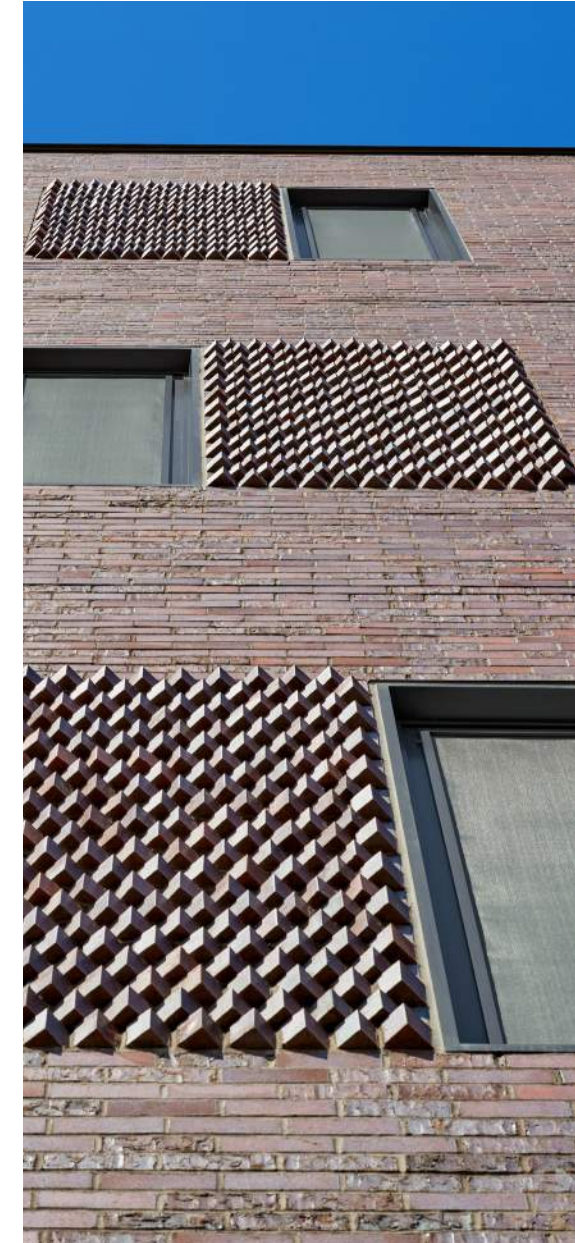
Displacement Ventilation



Ductless Fume Hood

Health: Acoustics

- Exterior material as buffer
- Interior partitions and flexibility



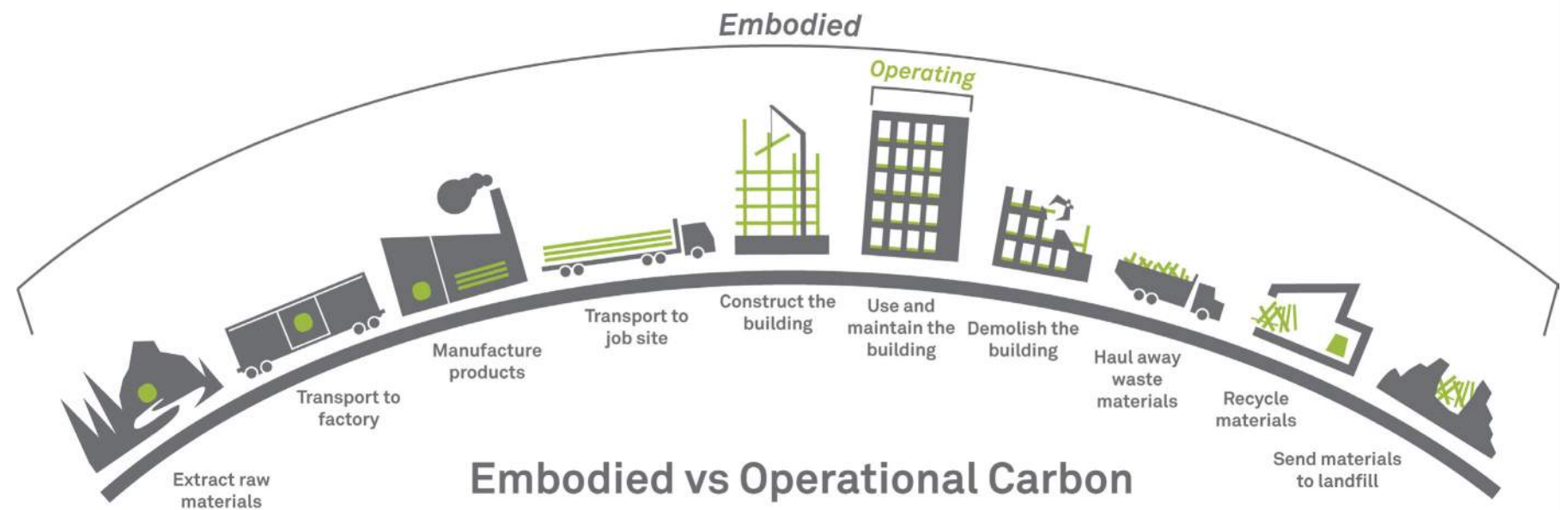
Health: Material

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

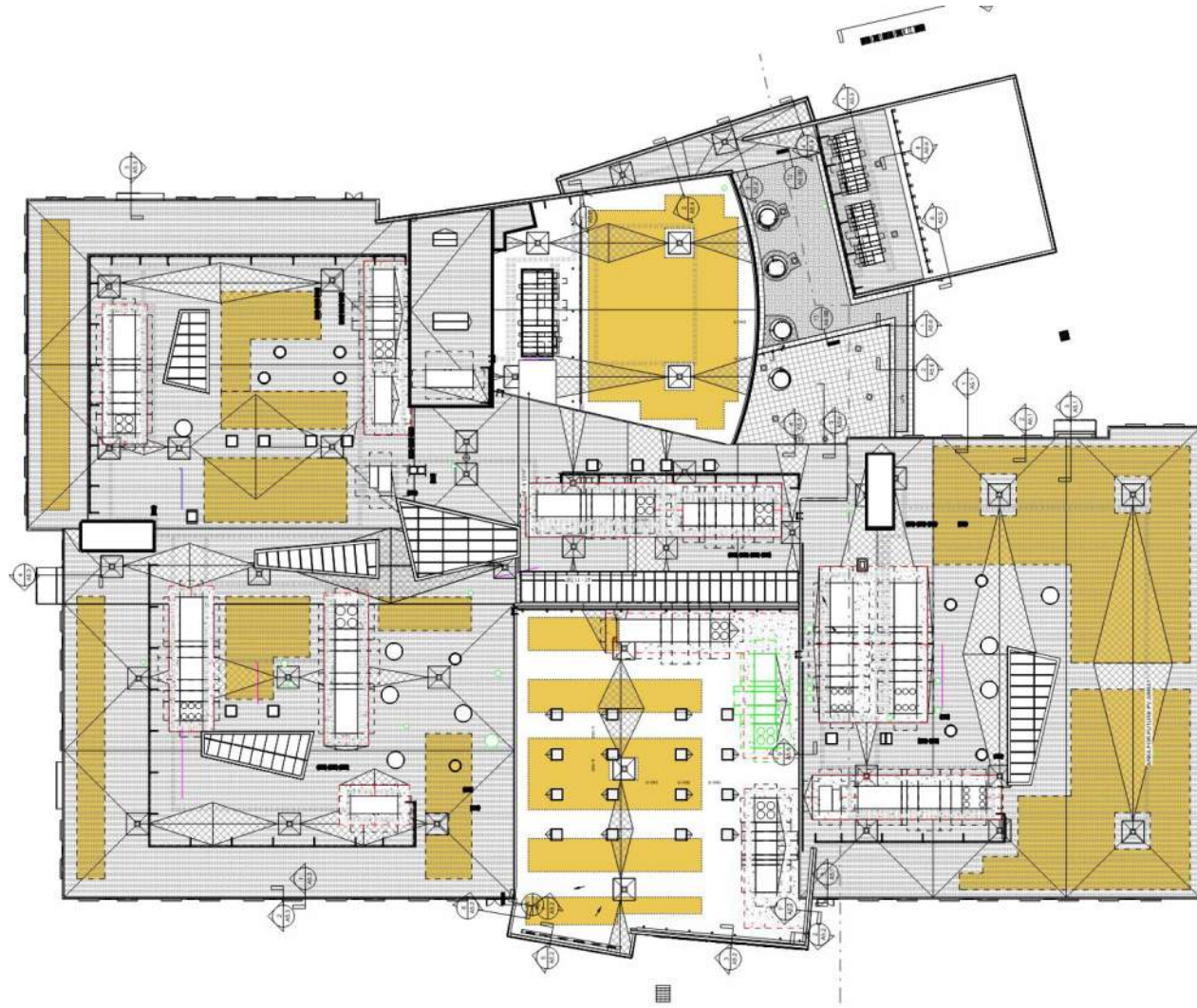


Energy Sustainability Goals

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



Energy: Solar



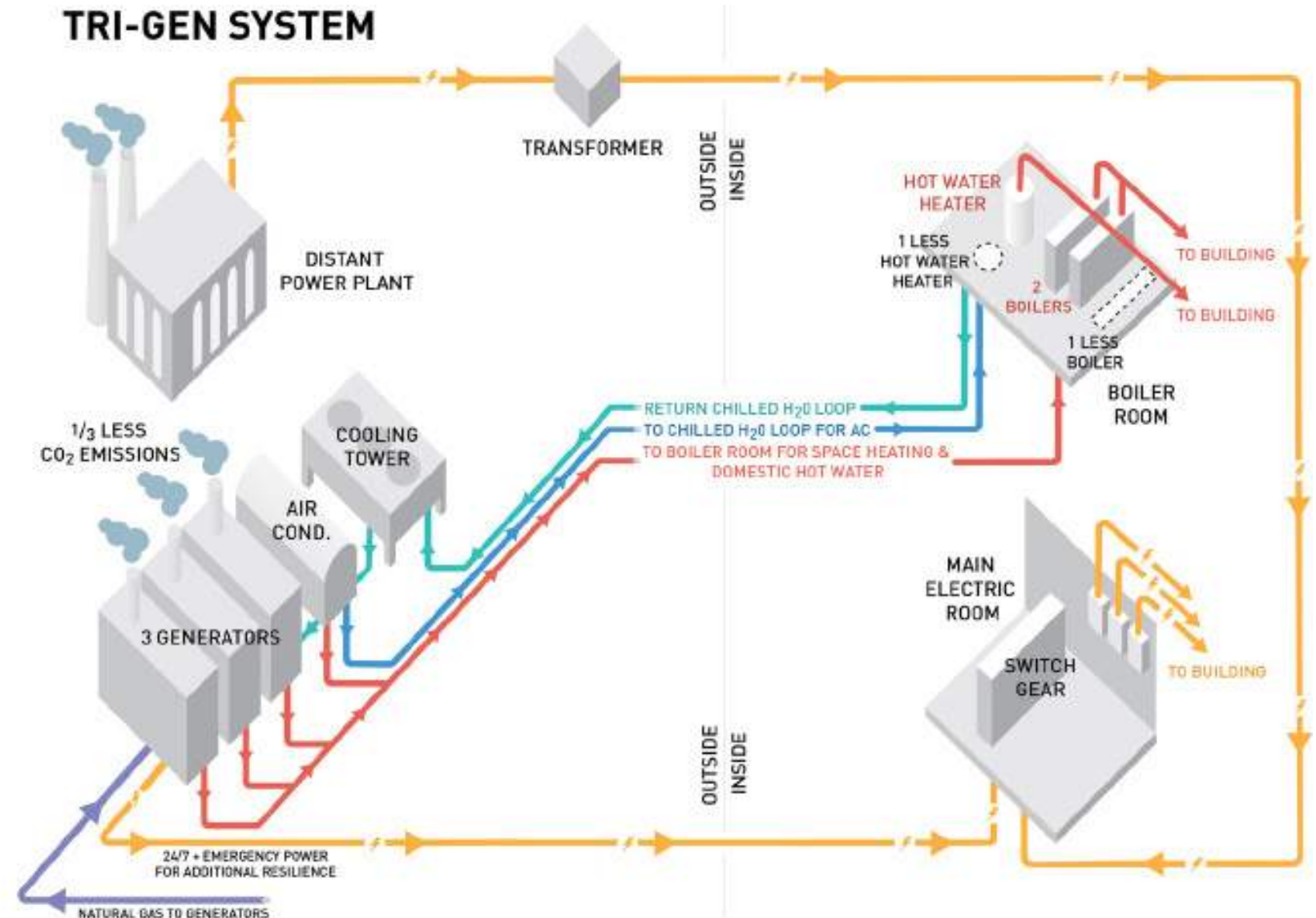
 PV Ready Locations



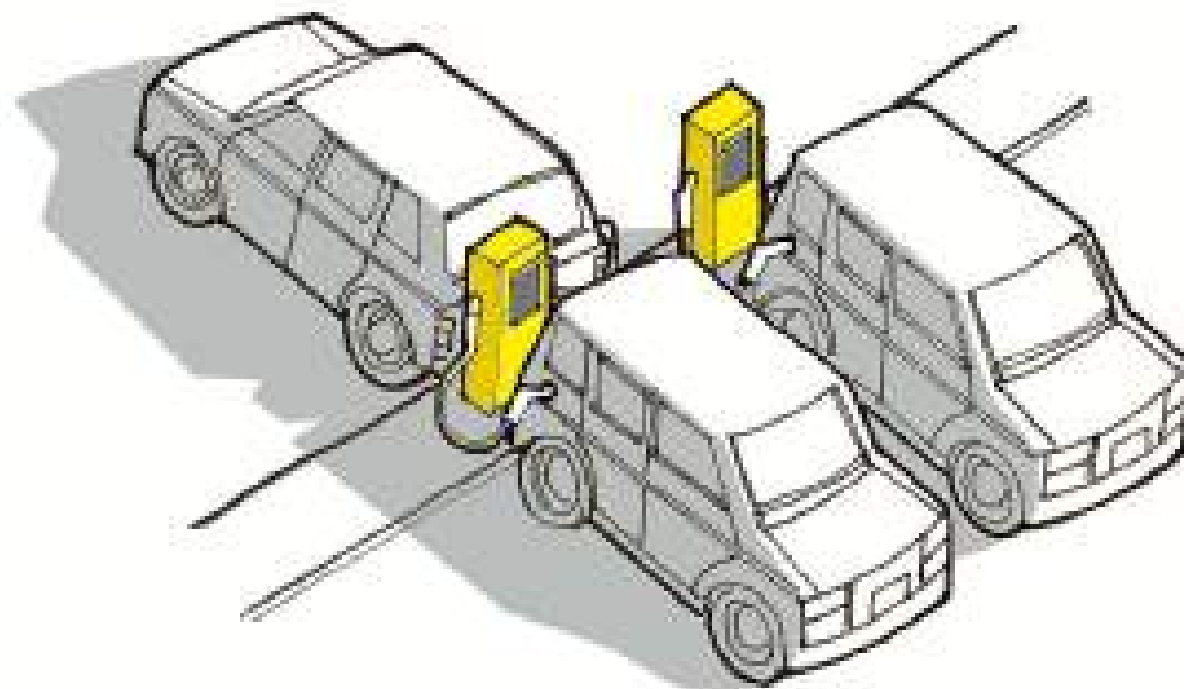
Solar Farm at Sagus Public Works

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

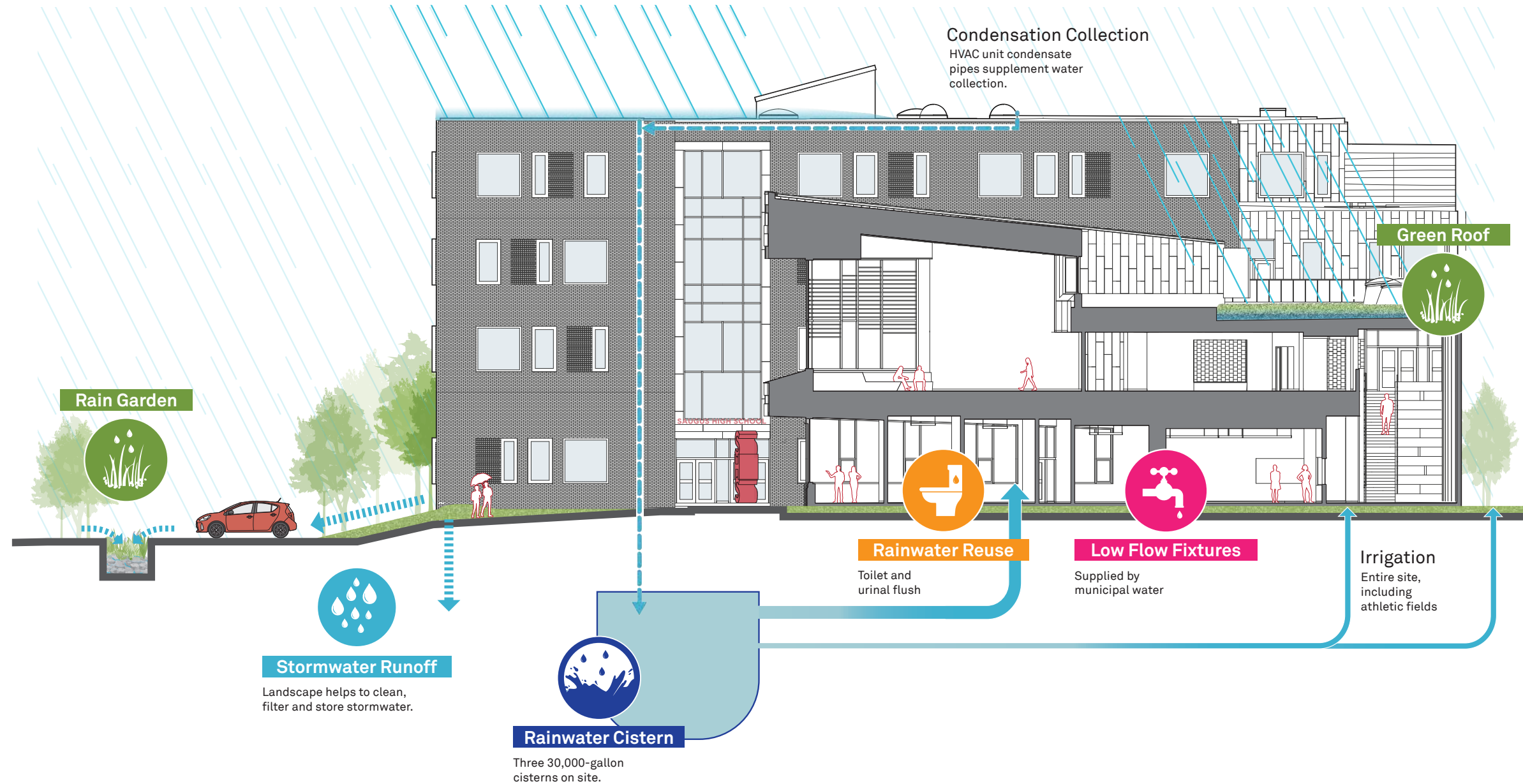


Water Sustainability Goals

- Water use reduction
- Stormwater management
- Protection of local area
- On-site processing



Water: Stormwater Management



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**



BLUE WATER

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.

COMPOST →

ACCEPTABLE FOOD:
ALL VEGETABLE & FRUIT
ALL MEAT & BONES
ALL DAIRY PRODUCTS
BREADS & PANES
CRUSTS, CRUMBS & PASTA
COFFEES & TEAS
SPICES & HERBS
SPILLED FOOD

ACCEPTABLE PAPER PRODUCTS:
HOUSEHOLD TOILET PAPER & TISSUES
HOUSEHOLD FILTER COFFEE & FILTER
HOUSEHOLD TISSUES
HOUSEHOLD NAPKINS
HOUSEHOLD TOWELS
HOUSEHOLD WIPES
HOUSEHOLD THERMAL LINERS
HOUSEHOLD THERMAL BAGS
HOUSEHOLD THERMAL COVERS
HOUSEHOLD THERMAL BAGS
HOUSEHOLD THERMAL COVERS
HOUSEHOLD THERMAL BAGS
HOUSEHOLD THERMAL COVERS

OTHER ACCEPTABLE PRODUCTS:
COMPOSTABLE PLASTIC FOOD PRODUCTS (CERTIFIED BY AN ACCREDITED CERTIFICATION BODY)
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UNACCEPTABLE MATERIALS:
FLAMMABLE LIQUIDS
Hazardous Liquids (Automotive Oil, Antifreeze, Brake Fluid, Transmission Fluid, etc.)
Household Appliances (Refrigerators, Washers, Dryers, etc.)
Refrigerators & A/C Units
Stoves & Ranges
Tires
Auto Parts
Flammable Liquids (Gasoline, Oil, Antifreeze, etc.)
Hazardous Liquids (Automotive Oil, Antifreeze, Brake Fluid, Transmission Fluid, etc.)
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Tires
Auto Parts

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

LIQUIDS →

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

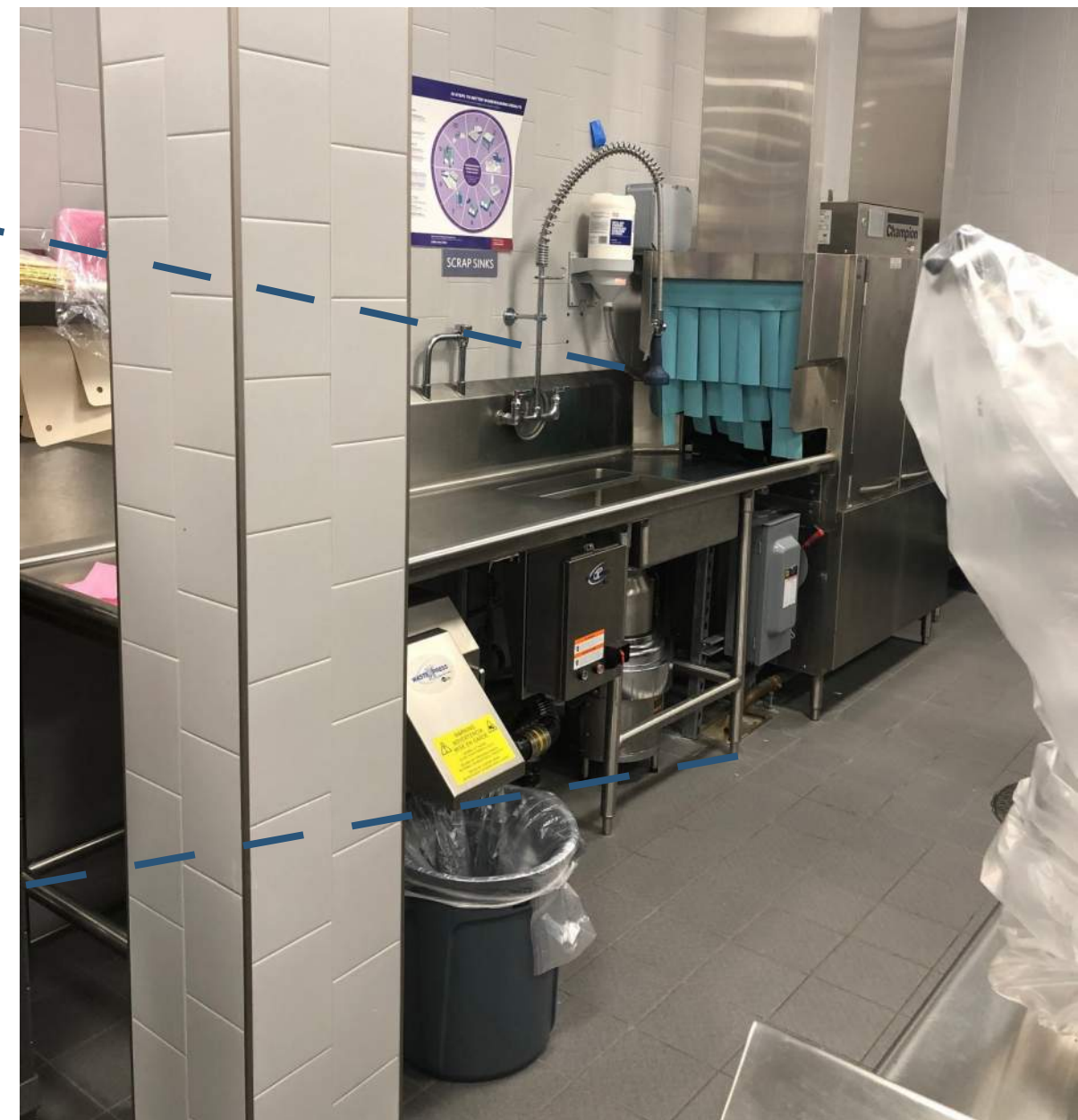
MIXED RECYCLING →

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.

LANDFILL →



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



GOLD
60-79 points

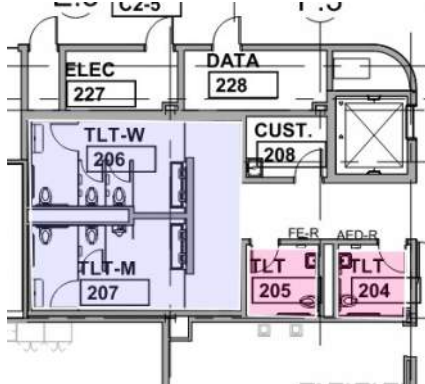


PLATINUM
80+ points

2



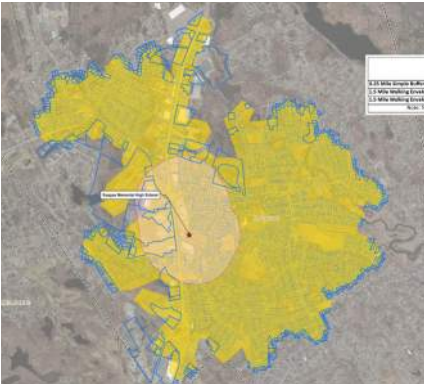
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Embracing Change: Lessons Learned

- 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 **Samiotos**

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

