

Franklin Elementary School

NEWTON, MA

Design Review Committee

April 10, 2024

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HMFH ARCHITECTS

Agenda

- Review of Working Group Exterior Decisions
 - Pop Out Panel/
Stair Tower Color
 - Canopy/ Signage
- Exterior Tour of Building
- Exterior Option Studies
 - Stair Fenestration
 - Gym Windows
- Carbon Analysis
- Site & Building Plans

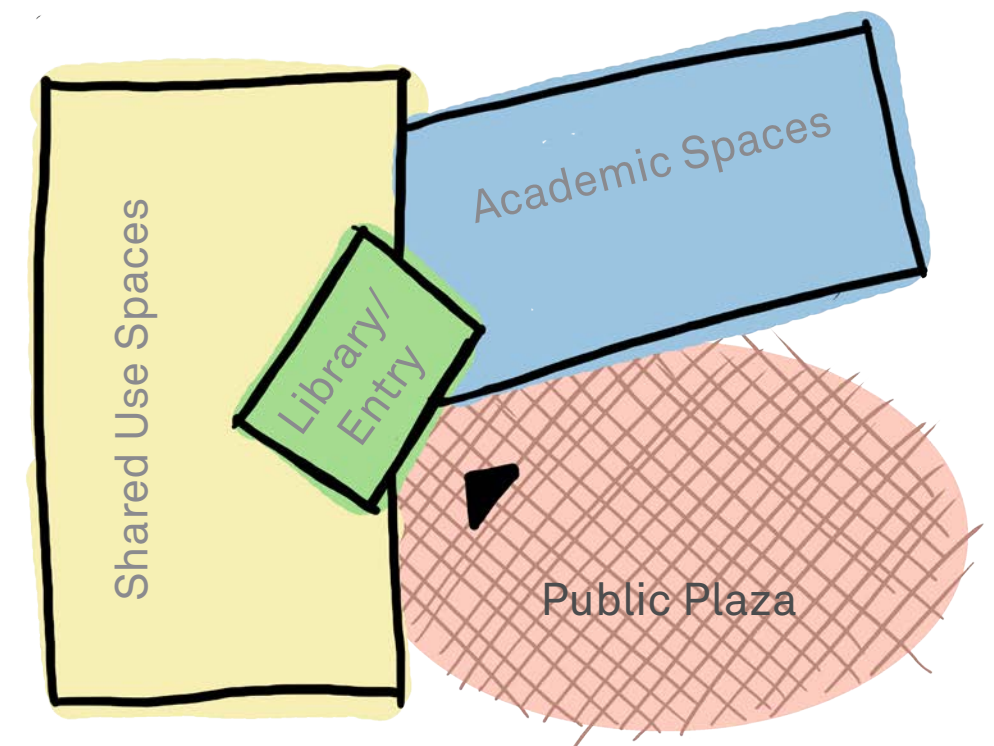


Project Statistics

of Current Scheme

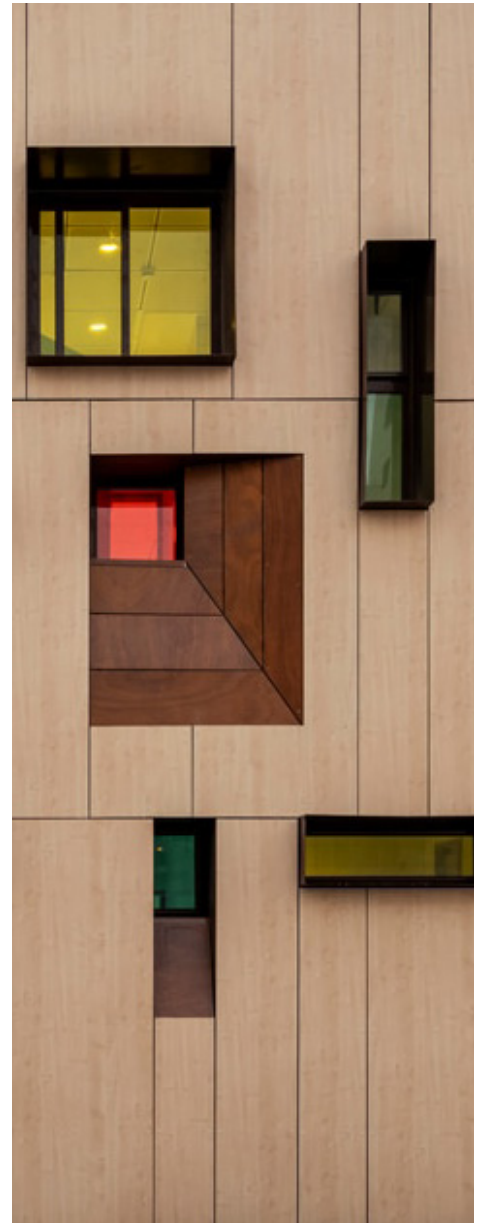
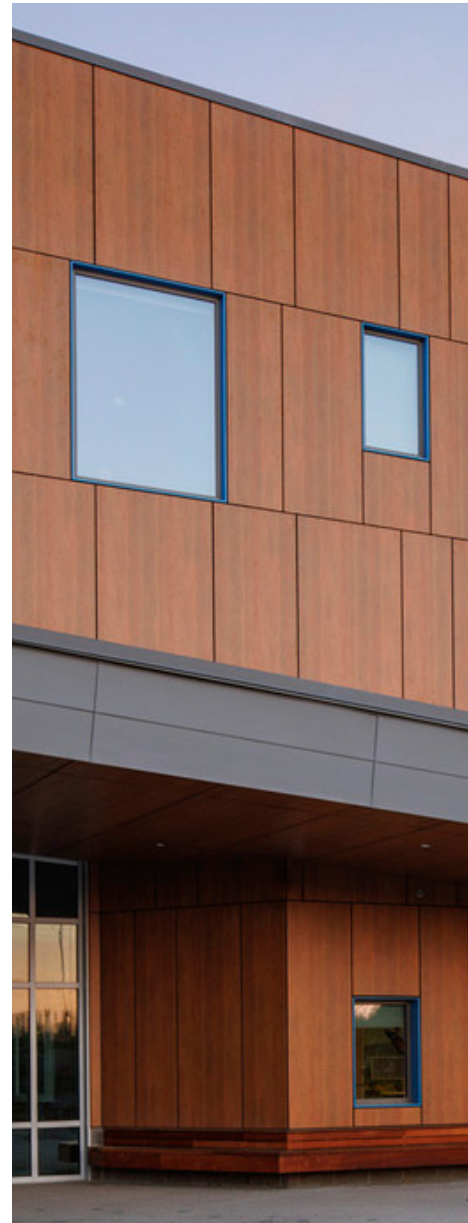
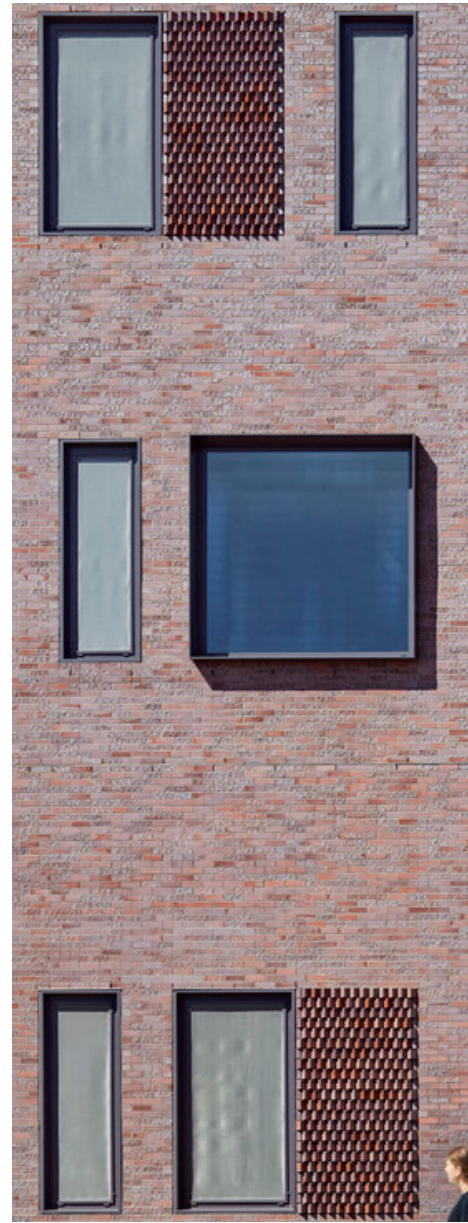
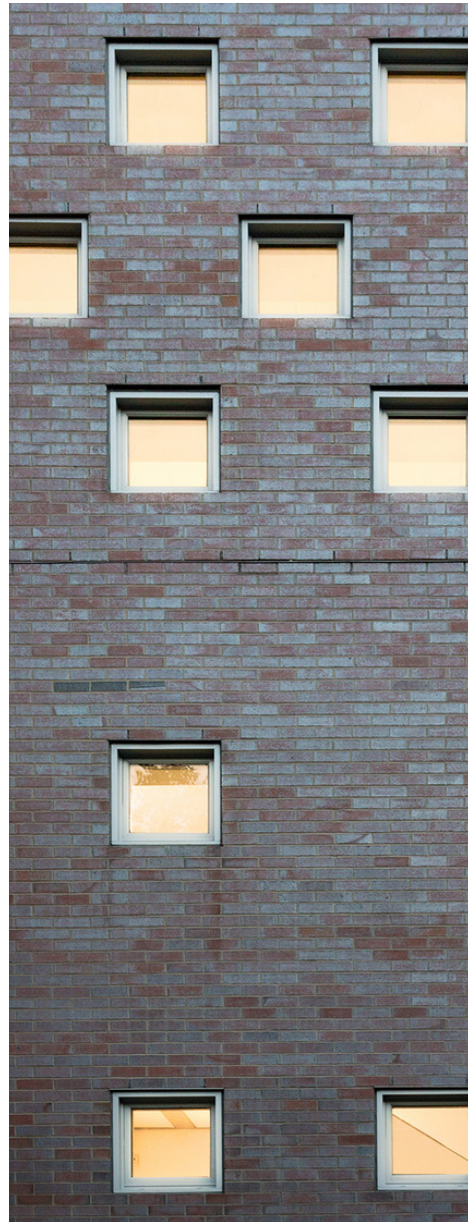
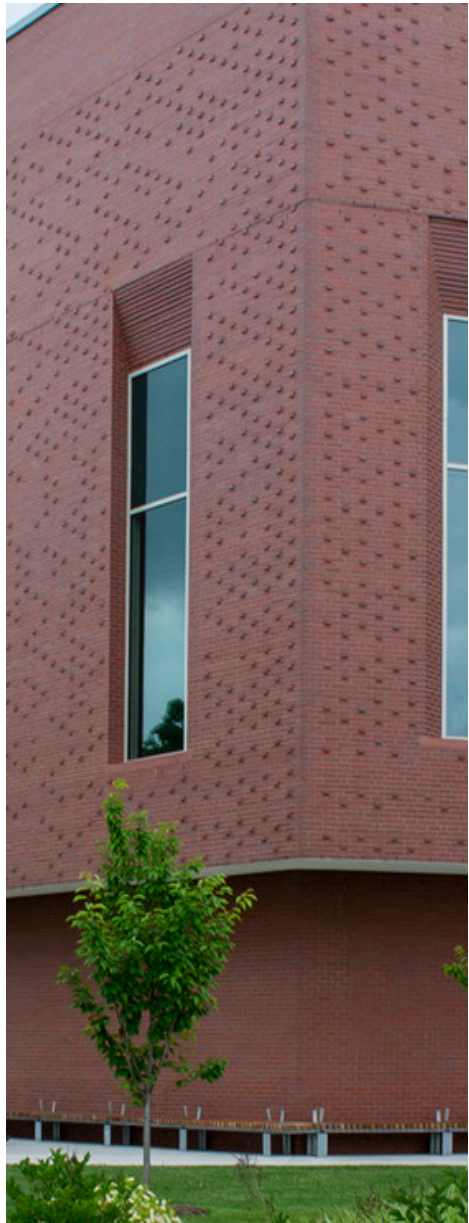
- Enrollment - 396 students
- Design meets all program requirements - size of spaces and adjacencies
 - Program Net SF: 47,265 NSF
 - Gross Sf: 70,898 SF
 - Net to Gross Ratio : 1.5
- Exterior window to wall ratio - 21%
- Target EUI - 25kBtu/sf/year
- Systems BoD: Ground source heat pump, variable refrigerant flow
- Zero combustion/ all electric

Parti (*noun*) the basic general scheme of an architectural design



Exterior Envelope Materials Palette

Brick & Phenolic Wood Panel



Pop Out and Tower Pairings

Review of Options



01 Pale



02 Limestone



03 Pewter



04 Ambar



05 Rubi



Canopy/ Signage

Review of Options



Exterior Tour of Building

View from Blue Zone



Exterior Tour of Building

View from Bus Drop Off



Exterior Tour of Building

View of Main Entrance



Exterior Tour of Building

View from West on Derby Street



Exterior Tour of Building

View of Cafeteria Entrance



Exterior Tour of Building

View from Cherry Street Path



Exterior Tour of Building

View from Basketball Court



Exterior Tour of Building

View from Multipurpose Fields



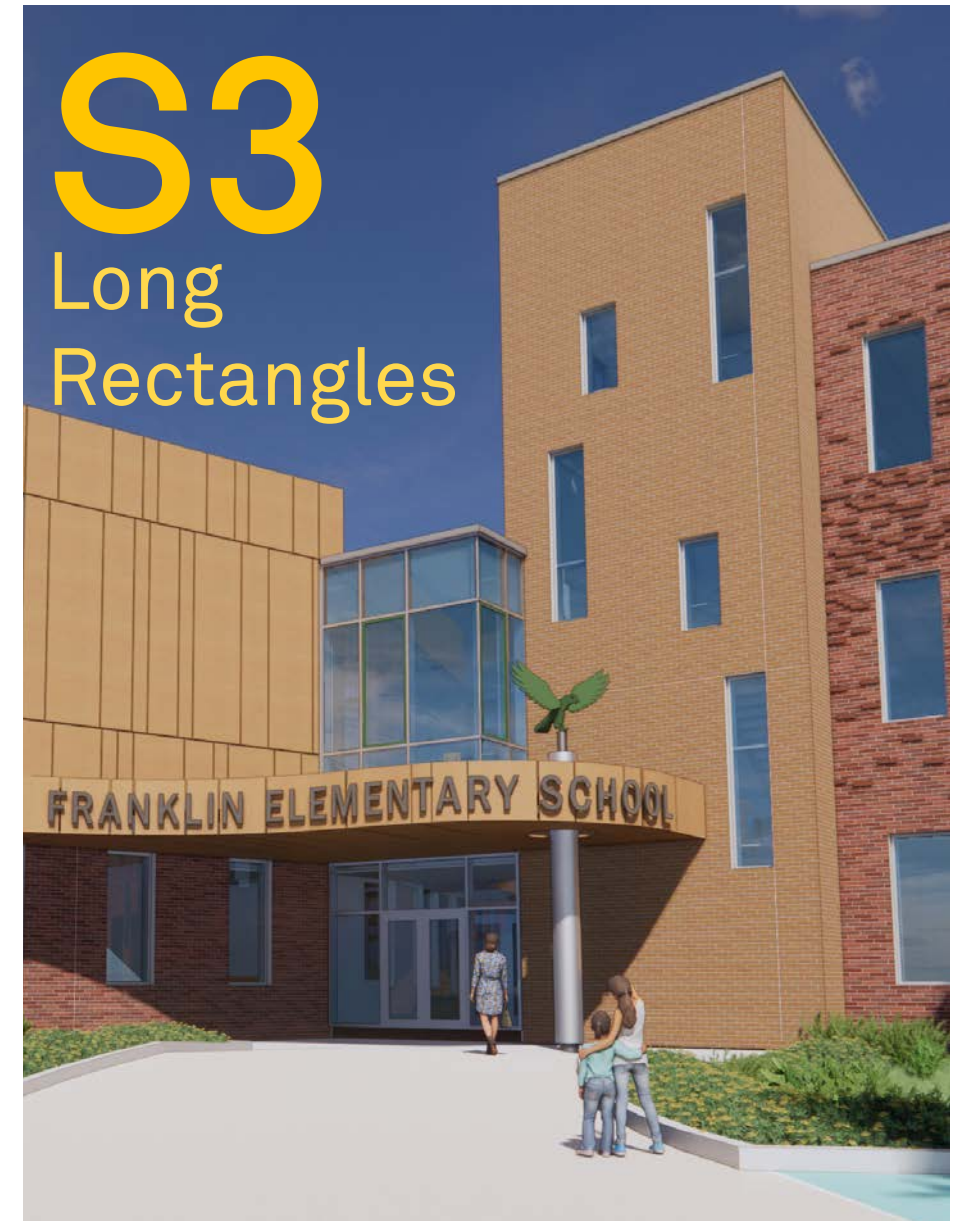
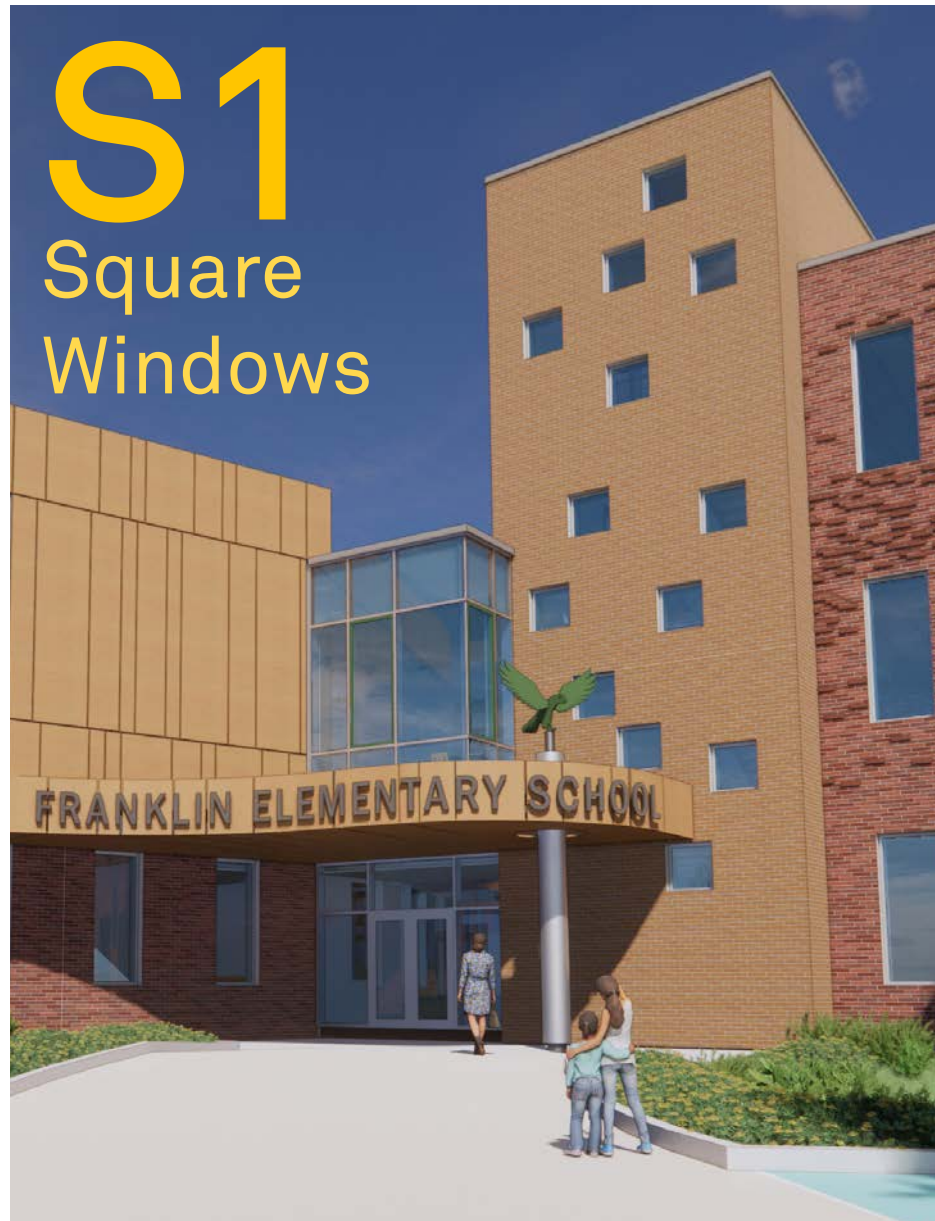
Exterior Tour of Building

View of Gymnasium Entrance



Stair Fenestration

Review of Options



Stair Fenestration

Square Windows

S1



Stair Fenestration

Square Windows



Stair Fenestration

Small Rectangles

S2



Stair Fenestration

Small Rectangles

S2



Stair Fenestration

Long Rectangles

S3



Stair Fenestration

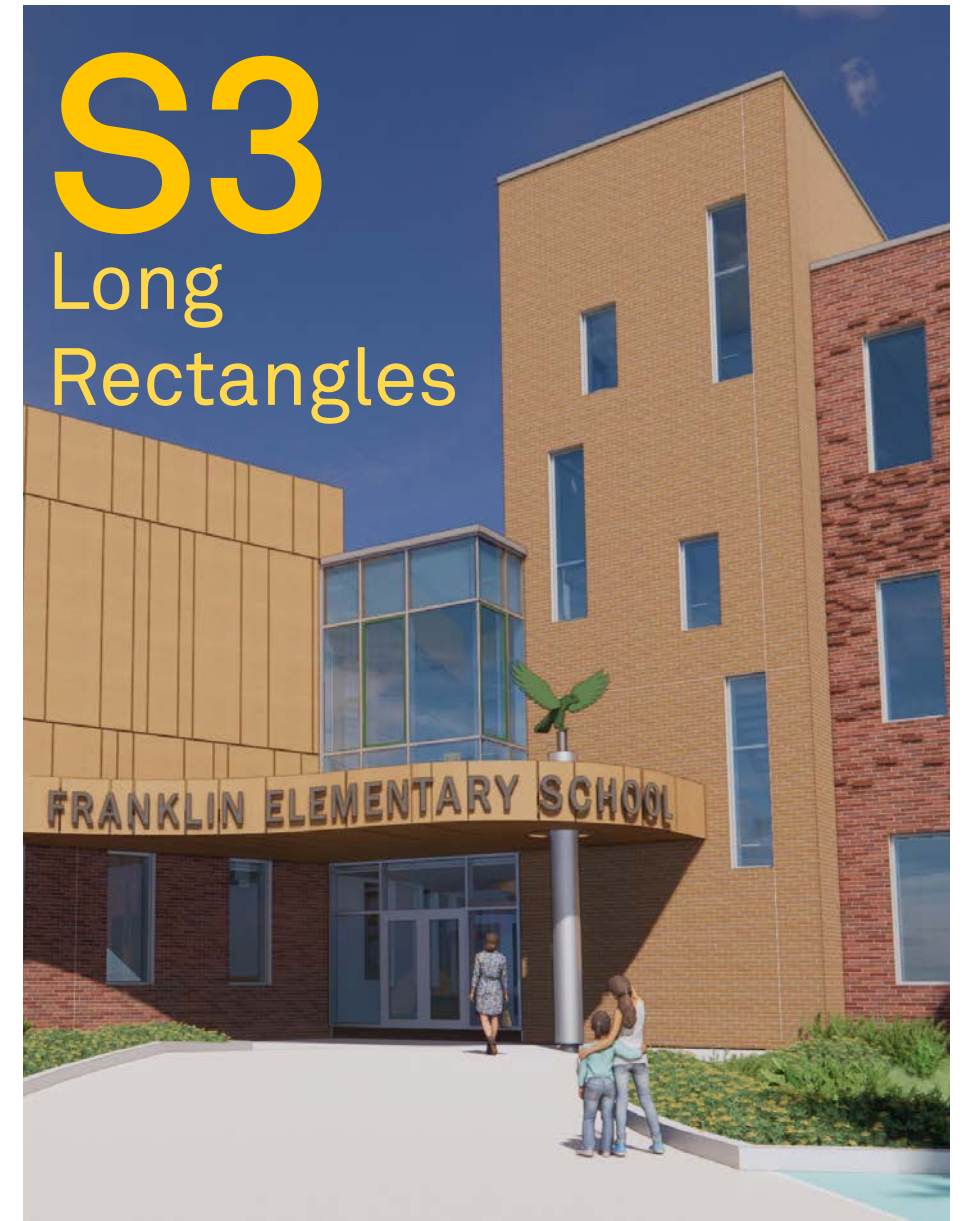
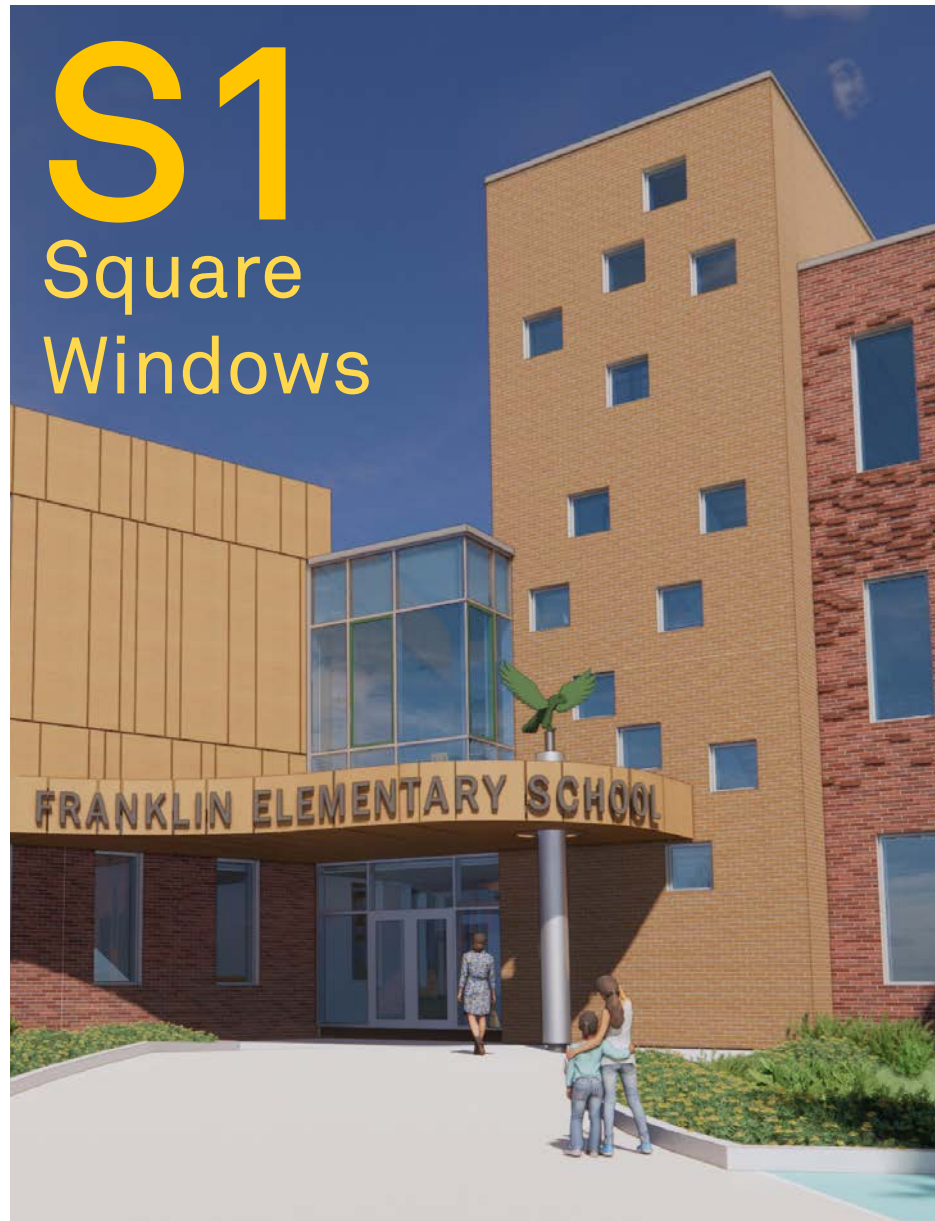
Long Rectangles

S3



Stair Fenestration

Review of Options



Gymnasium Fenestration

Review of Options



Gymnasium Fenestration

G1

High Punched Windows w/ Pattern A



Gymnasium Fenestration G2

High Punched Windows w/ Pattern B



Gymnasium Fenestration G3

Ribbon Windows w/ Pattern A



Gymnasium Fenestration

Review of Options



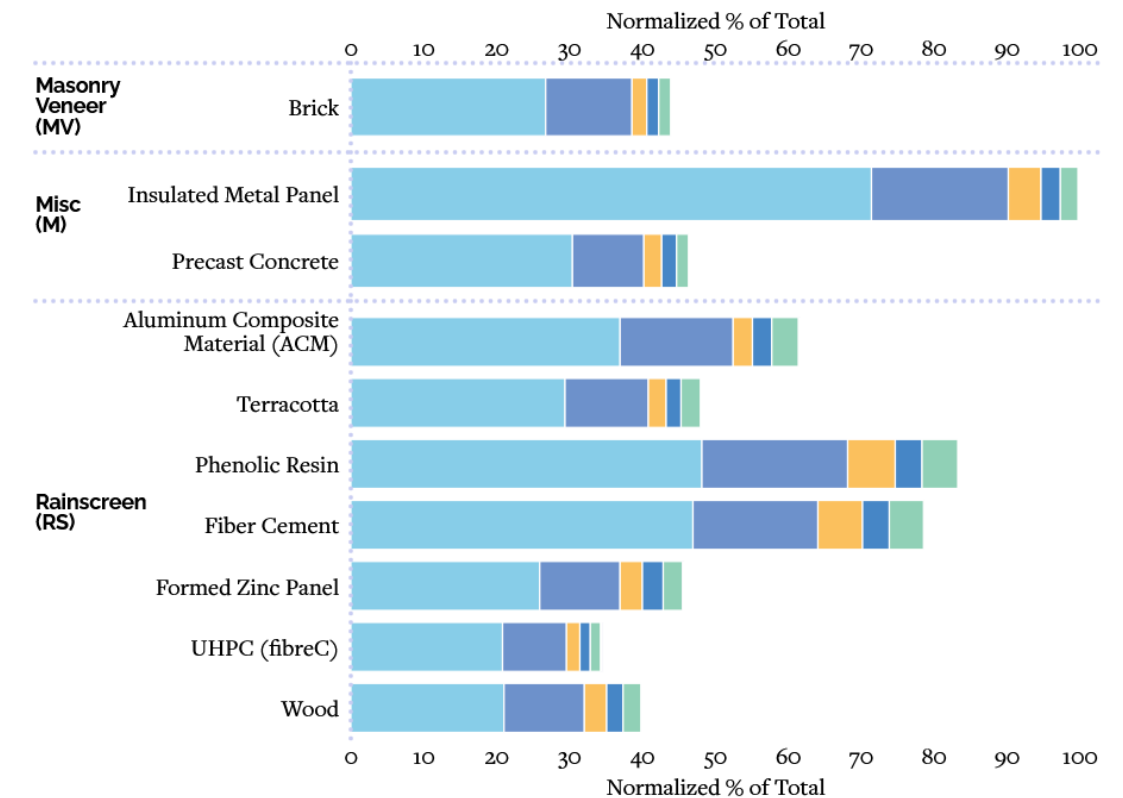
Reducing embodied carbon: Process

Perform Carbon Life Cycle Analysis at each phase of the project:

- Schematic Design: Rough order-of-magnitude Tally analysis
- Design Development: Compare Tally analysis to SD results and look for areas of focus
- 50% Construction Documents: Evaluate progress and target improvements
- 90% Construction Documents: Final evaluation and refinement

Target reductions in the following categories with a focus on Global Warming Potential:

- global warming potential (greenhouse gases), in kg CO₂e;
- depletion of the stratospheric ozone layer, in kg CFC-11 e;
- acidification of land and water sources, in moles H⁺ or kg SO₂e;
- eutrophication, in kg nitrogen eq or kg phosphate eq;
- formation of tropospheric ozone, in kg NO_x, kg O₃ eq, or kg ethene;
- depletion of nonrenewable energy resources, in MJ using CML



All Building Life Cycle Impacts - 60 year lifespan

Reducing embodied carbon: Seek every reduction

Building planning:

- Design efficient building layout: building less = less carbon, 1.5 grossing factor assures efficiency
- Minimize floor to floor heights: reduced to 14' floor to floor
- Determine most efficient structural layout: building simplicity = efficiency
- Balance site cut and fill
- Reduce material use: remove ceilings and expose structure in select locations

Material selection:

- Review material transparency documentation, including EPDs, HPDs, and Declare Labels to ensure selection meets project goals
- Specify bio-based materials: linoleum flooring
- Specify high recycled content
- Specify materials with “end-of -life” plan: carpets, lighting, furniture
- Specify sustainable harvested wood products certified by the Forest Stewardship Council (FSC)



Reducing embodied carbon: Focus where it counts

Specify building structures with performance based limits:

- Concrete:
 - reduce cement in mix design w/ supplemental cementitious materials; up to 25% fly ash or 50% blast furnace slag
 - **require mix design with a minimum Global Warming Potential reduction of 15-20% when compared to the regional baseline (total project)**
- Structural steel:
 - require minimum recycled content of 93%
- Steel reinforcing:
 - require minimum recycled content of 92%
- Steel Deck:
 - require minimum recycled content of 70%

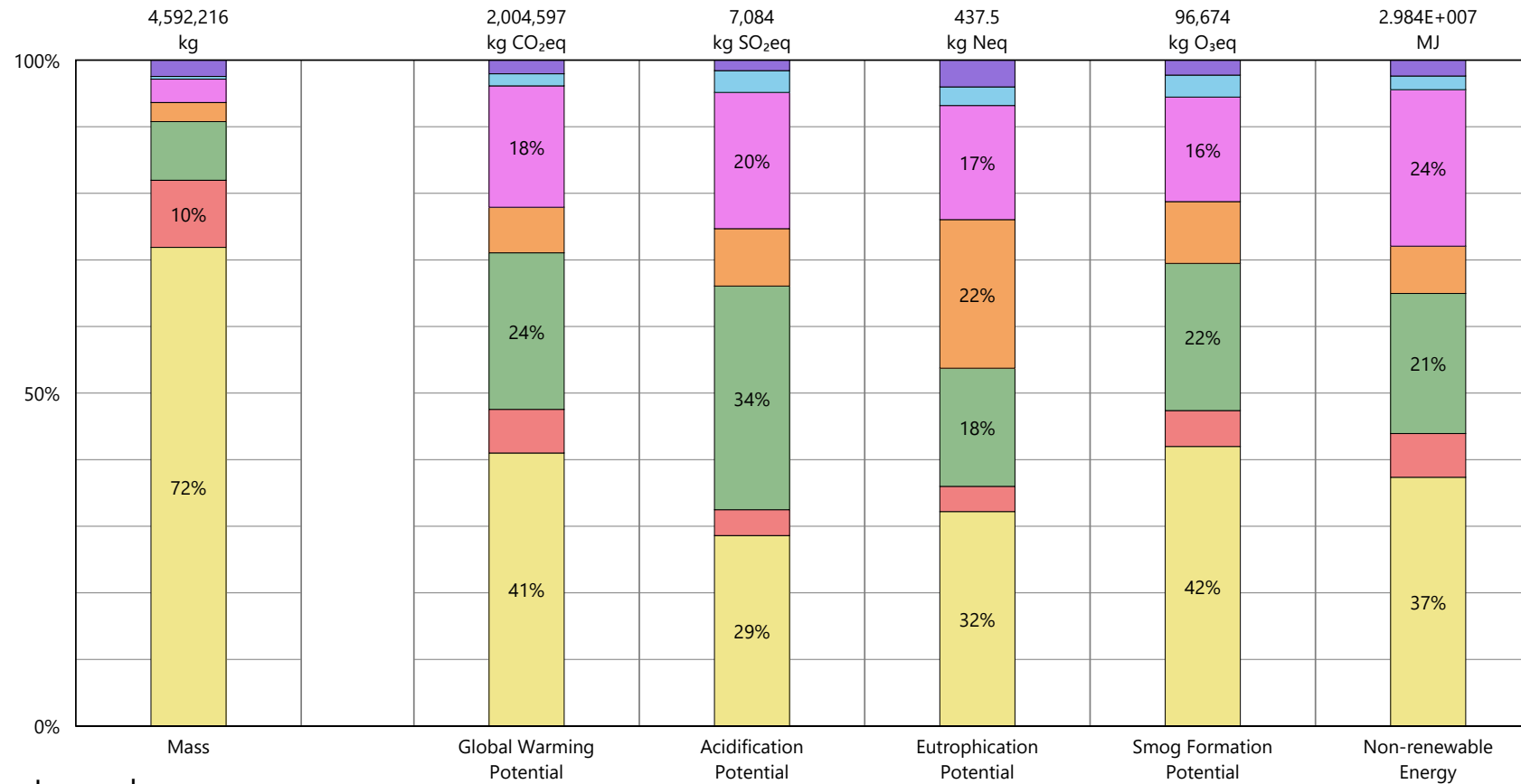
Explore opportunities for heavy timber structures:

- **Roof beams allowed within Construction Type 2B**
- Test impact of timber beams at library, entry lobby, and cafeteria pop-up



SD initial Tally model

Results per Division

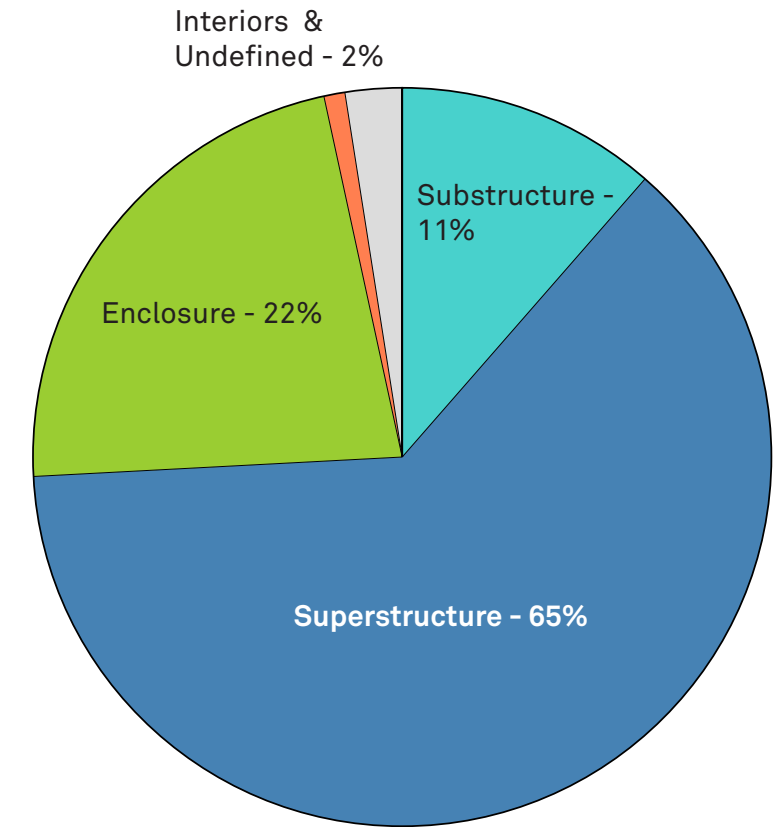


Legend

Divisions

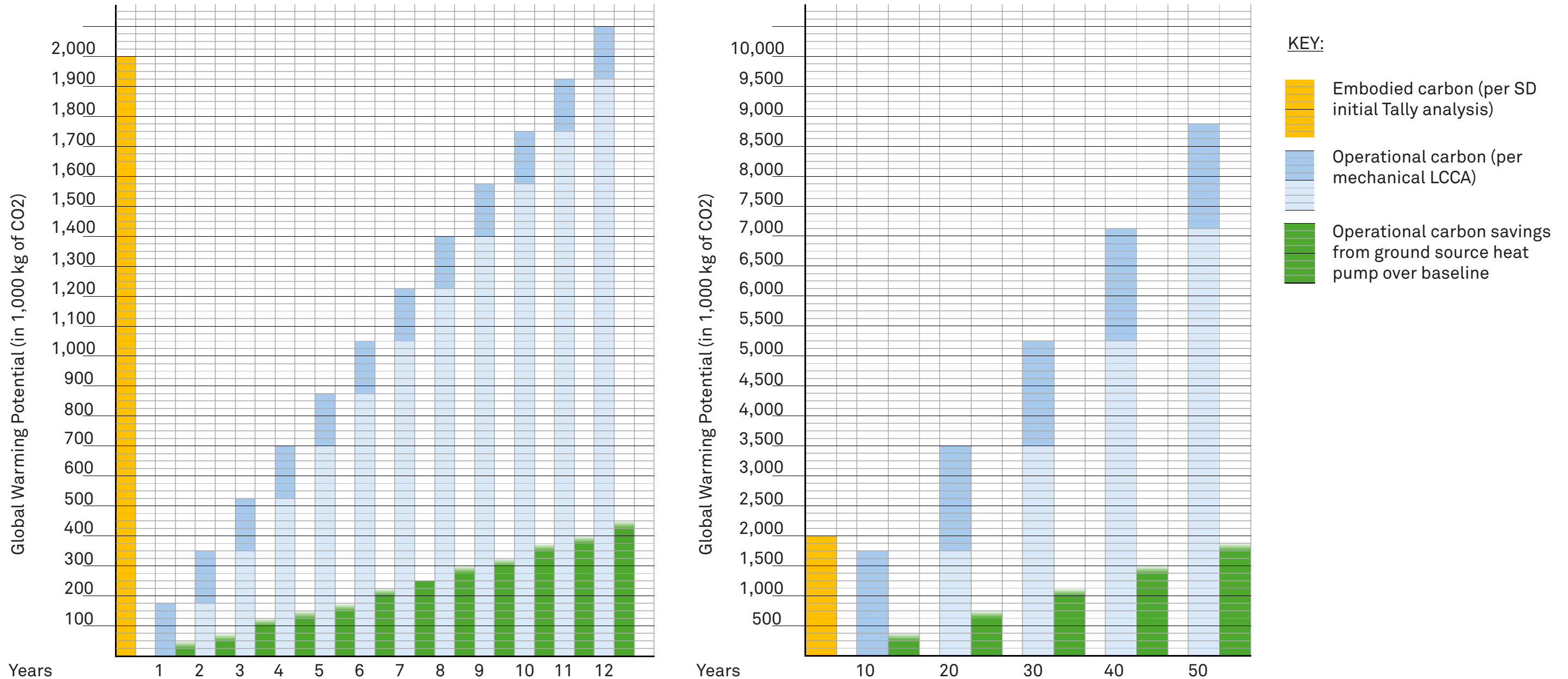
- 03 - Concrete
- 04 - Masonry
- 05 - Metals
- 06 - Wood/Plastics/Composites
- 07 - Thermal and Moisture Protection
- 08 - Openings and Glazing
- 09 - Finishes

Global Warming Potential



Reducing embodied carbon: Focus where it counts

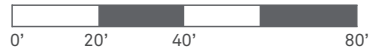
Embodied carbon vs. operational carbon over time:



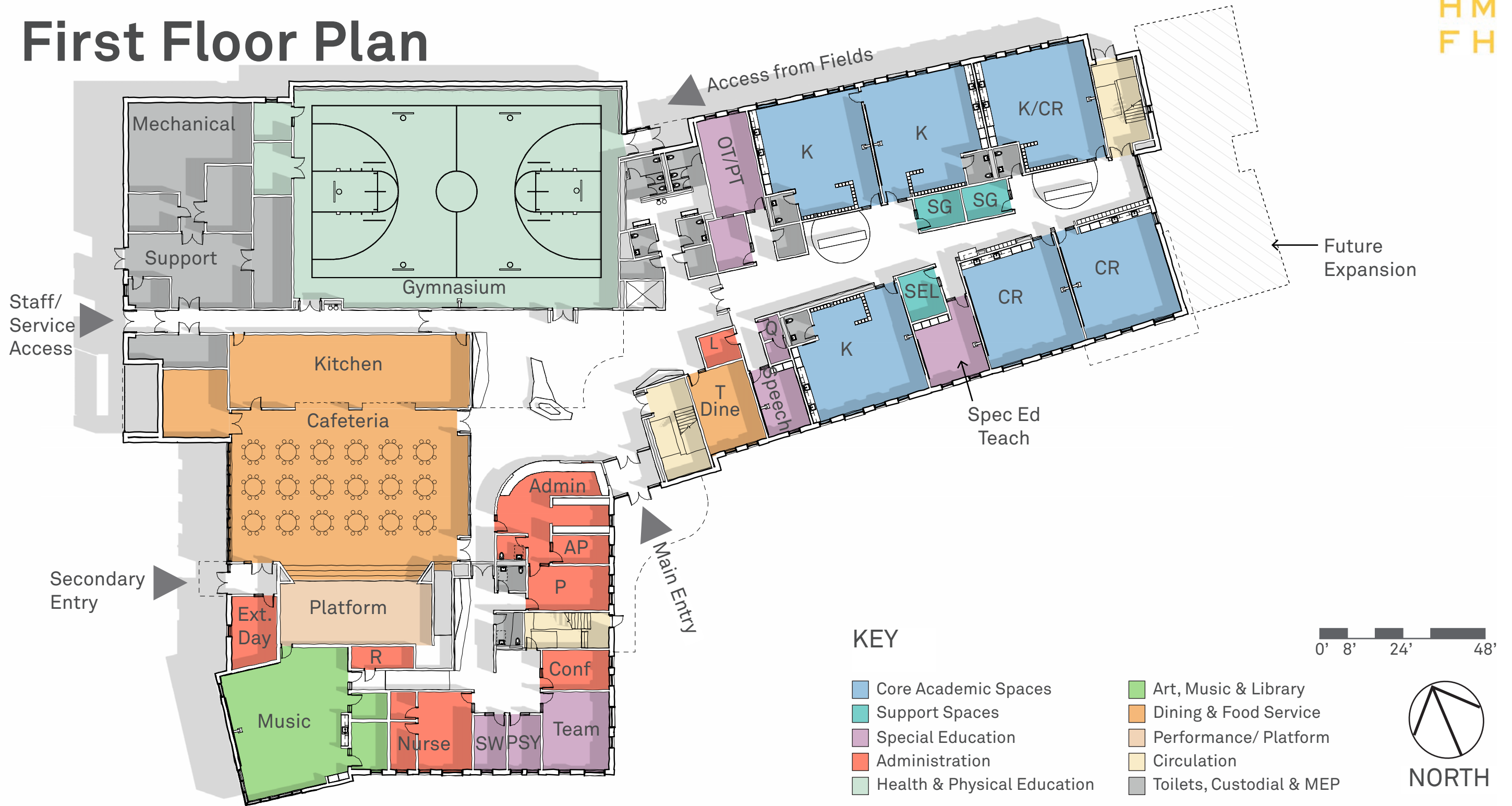
Site Plan



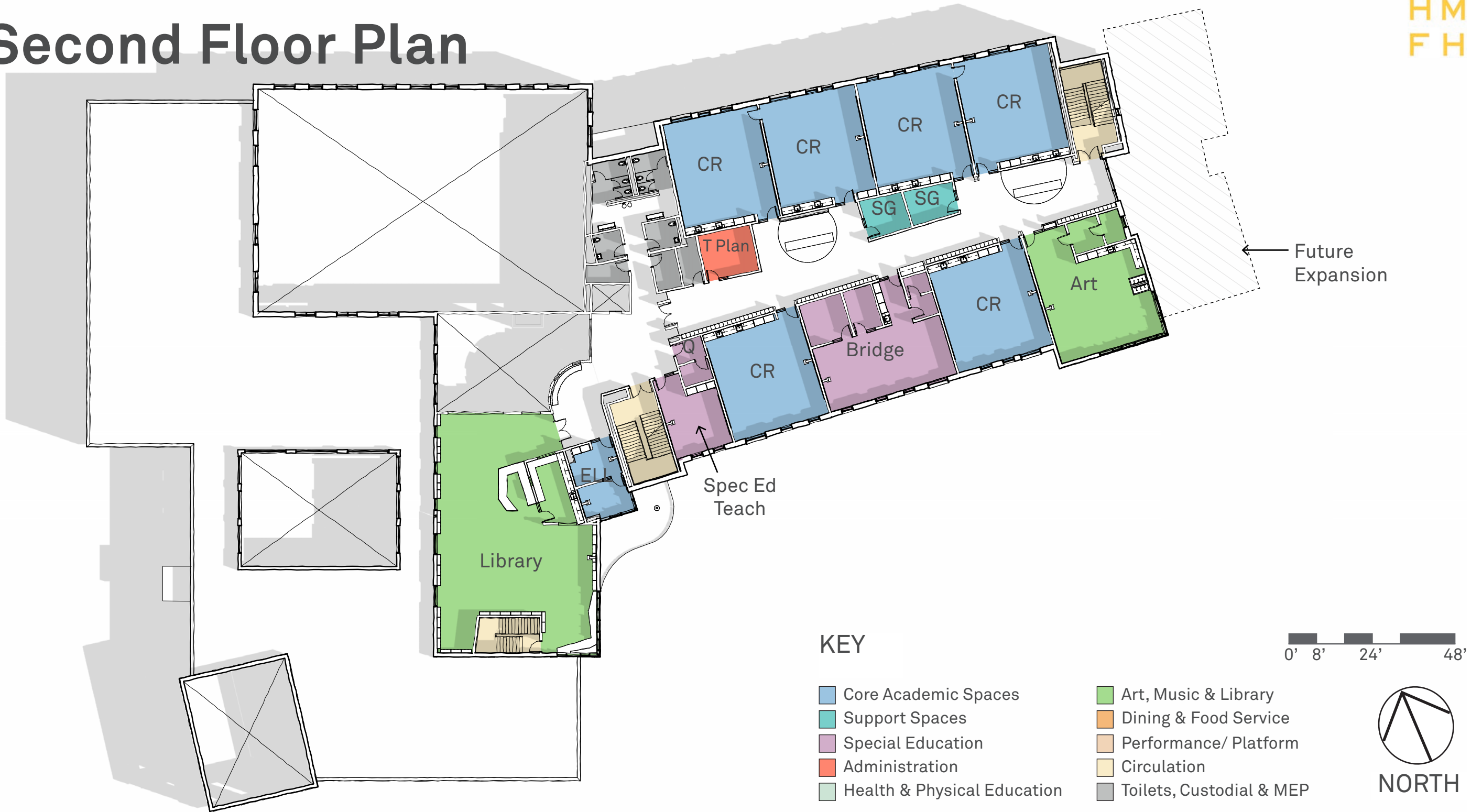
NORTH



First Floor Plan




Second Floor Plan



Future Expansion

Spec Ed Teach

KEY











- | | |
|---|--|
|  Core Academic Spaces |  Art, Music & Library |
|  Support Spaces |  Dining & Food Service |
|  Special Education |  Performance/ Platform |
|  Administration |  Circulation |
|  Health & Physical Education |  Toilets, Custodial & MEP |



Third Floor Plan



KEY

- | | |
|---|--|
|  Core Academic Spaces |  Art, Music & Library |
|  Support Spaces |  Dining & Food Service |
|  Special Education |  Performance/ Platform |
|  Administration |  Circulation |
|  Health & Physical Education |  Toilets, Custodial & MEP |



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