



Town of Concord

Concord Middle School

Middle School Building Committee

07.29.2021

**EWING
COLE** | **SMMA**

Project Goals Recap



Total Project Cost Range per RFS **\$80-\$100 M**
Total Project Cost maximum per CMSBC vote **\$108 M**
Total Project Cost maximum currently estimated **\$102 M**



Replace two middle schools with **one combined middle school**, grades 6-8



Design enrollment **700 Students**



Team Teaching Model, meet **Ed Plan**



Design for **Net Zero Energy**

Primary Goal:
Consolidate two middle school populations **into a single, 21st century learning facility** that will serve the community for generations.



Cost Management

Concord Middle School

Cost Saving Due-Diligence ● To Date

Building Envelope

- Compact and Linear Footprint
- Commitment to Masonry exterior
- Commitment to “typical” and durable interior building materials
- 25% Window to Wall Ratio down from 30% in original FS estimate

Square-footage

- Compact and Linear Footprint
- Scheduling analysis during Feasibility, right-sized number and quantity of rooms
(e.g. Smaller Dining area and Media Center than MSBA typical)
- Maker Space and Alt PE / Occupational Therapy space removed by CPS to lessen increase by Community requested square-foot increases to gym and auditorium
- Gym: Efficiencies through detailed discussion of requirements

Cost Saving Due-Diligence ● To Date

Sustainability

- LEED certifiable and EZ Code with exceptions to be reviewed in lieu of Passive House; no formal certifications being pursued

Building Components

- No lockers (note: tile will need to be added in its place)

Building Systems

- Flexible sprinkler pipe connections
- Variable Refrigerant Flow (VRF) system
- No natural gas for science labs or kitchen

Site Design

- Removed lower fields from project scope
- Fire Department agreed that fire lane on south side of building is not required due to sprinkler, proposed footprint, egress, etc.

Project Delivery Method

- Design Bid Build in lieu of CM at Risk

Cost Saving Due-Diligence ● On-going

Sustainability

- Reviewing number of EV charging (and readiness) stations

Building Envelope

- Will continue to be refined until bid!!

Square-footage

- Gross area will continue refinement through Schematic Design
- Most efficient layout in Auditorium being studied
- Working with CMS Admin, Teachers and Staff to refine all classrooms, work rooms and storage areas

Building and Site Materials, Components, etc.

- Continued development of materials
- Continue review of operable wall quantity, type, location
- No roof-top outdoor classroom (instead: outdoor classroom “ready”)
- Locate mechanical equipment to require minimal or no acoustic screening

Currently Known Cost Risks

Market Conditions

Unforeseen site conditions

Septic System design requirements

The background is a stylized map of the Concord Middle School site. It features a network of white lines representing roads and paths. Large areas are shaded in light green, likely representing lawns or landscaped areas. Several building footprints are shown in light grey. Two specific locations are highlighted with orange symbols: a large 'F' shape in the upper right and a large 'X' shape in the lower left.

Site Design

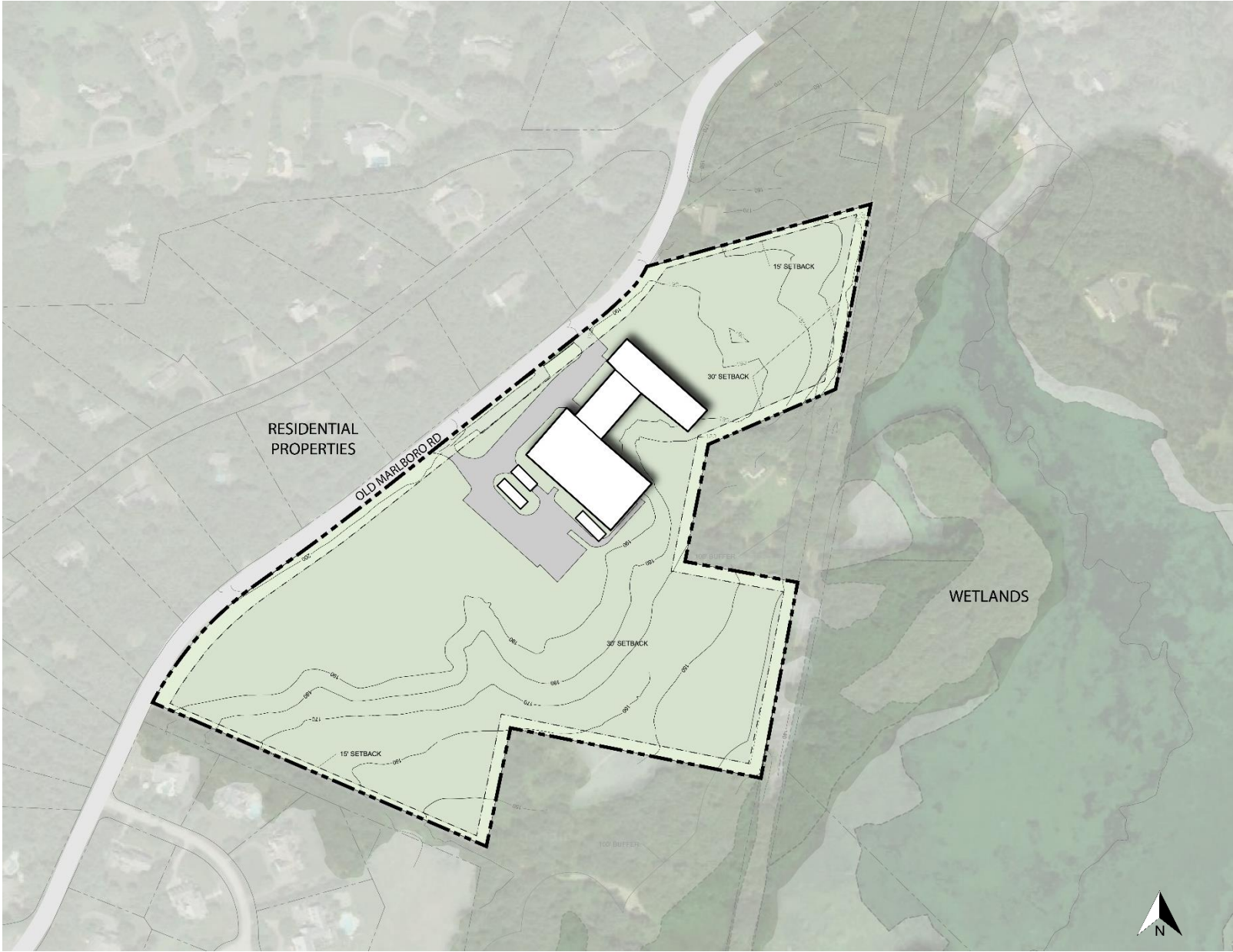
Concord Middle School

EXISTING

Total Property Area	31.3 Acres (1,400,000 SF)
Wooded or Sloped	16.1 Acres (700,000 SF)
Lower “Plateau”	2.7 Acres (117,000 SF)
Building/Parking/Septic	7.0 Acres (305,000 SF)
Remaining Area:	5.5 Acres (241,000 SF)

PROPOSED

Phase 1 L.O.W. (Bldg, parking, circ, grading)	8.0 Acres (350,000 SF)
Phase 2 L.O.W. (Athletic fields, grading)	7.8 Acres (341,000 SF)



EXISTING SITE PLAN

LEARNING

Create a middle school learning environment that addresses the unique **social and emotional needs of the early adolescent**. This pedagogical priority translates into a facility that:

- Supports the efficacy of the educational team,
- Supports the fidelity of teaming,
- Embodies joy in learning,
- Fosters a pervasive spirit of inclusion,
- Offers opportunity for active engagement as well as opportunity for innovation, reflection and repose
- Places a social, collaborative, reflective media center at the heart of the school

CONTEXT

Create a building and a landscape that enhances the existing character of the community and is **strongly connected to the natural landscape**.

HISTORY

Create a building and a landscape that enhances town vitality and is **strongly connected to the history of Concord**.

ENVIRONMENT

Create a building and a landscape that **utilizes resources wisely** – one that balances energy use and consumption with optimized comfort, learning, and wellness.

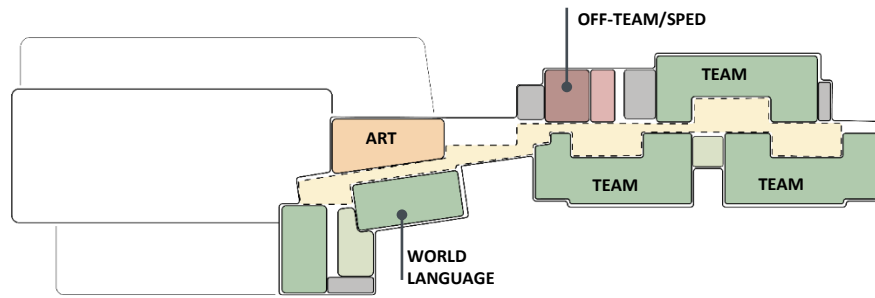
Create a building and a landscape that enhances the existing character of the community and is **strongly connected to the natural landscape.**

- Building Program
- Solar Orientation
- Driver for Site Program

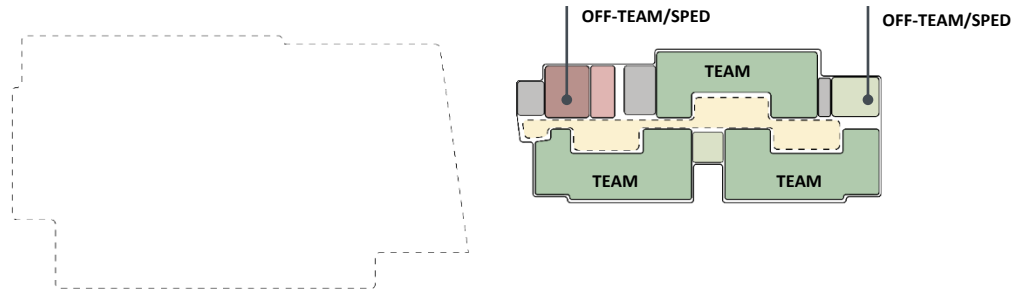




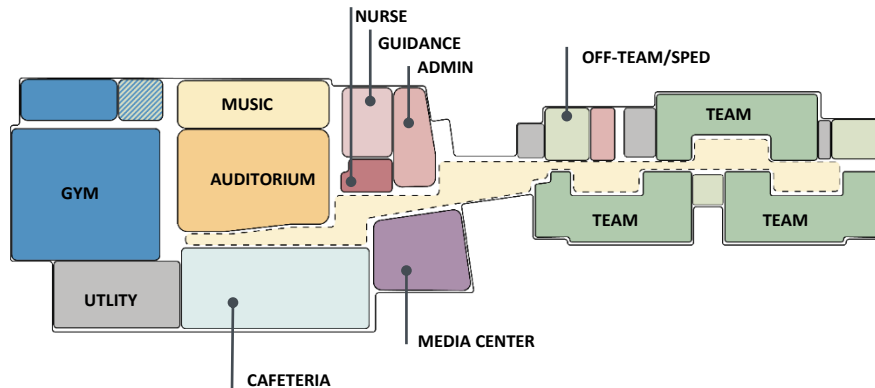
LANDSCAPE PARTI – ENLARGEMENT



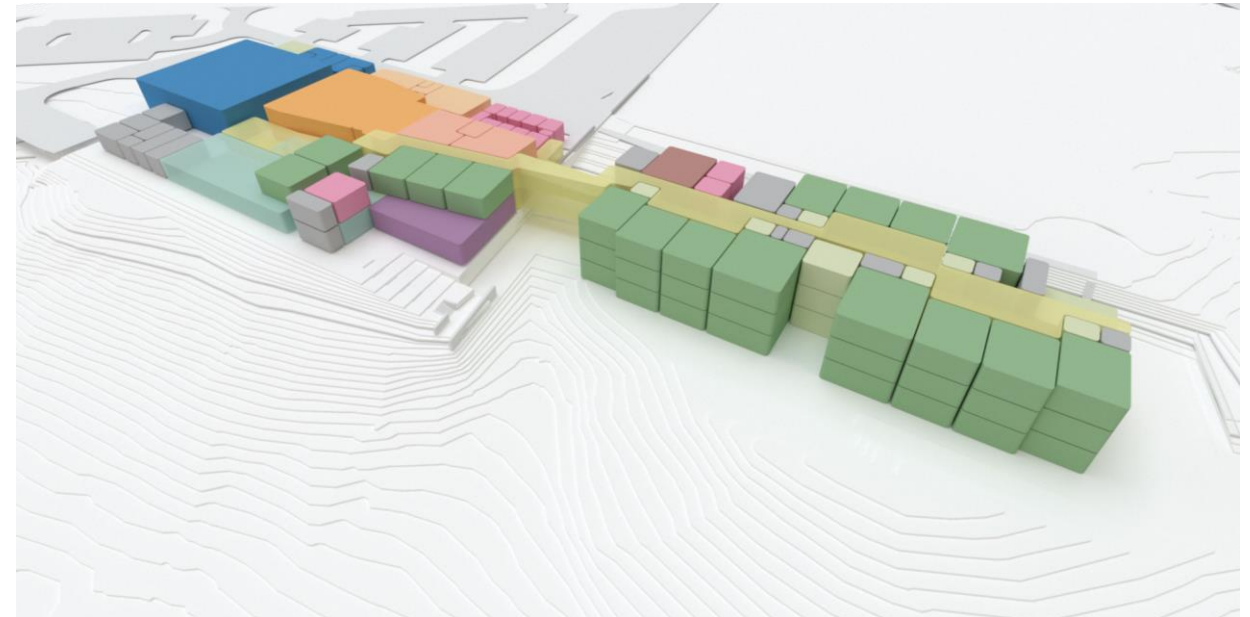
UPPER-LEVEL



LOWER-LEVEL



ORGANIZING DIAGRAM





ILLUSTRATIVE SITE PLAN

Connections



SITE DESIGN GOALS

Materiality



TIMBER

A renewable and reusable construction material, wood absorbs carbon from the atmosphere while growing and stores or *sequesters* it for the life of the timbers. Decomposition or burning releases the carbon to the atmosphere, underscoring the importance of durable designs. As a natural material, wood's strength, fire resistance, and weathering vary significantly by species, size, and orientation, just like the tree from which it came.

Heavy timber describes buildings made with large pieces of wood, offering durable, fire-resistant, and humanly pleasing structures. By assembling small pieces of wood into larger members, *engineered wood* reduces variation, yielding more predictable, stronger components and a range of sizes not possible without scarce, old-growth trees. Adding adhesives, and other chemicals to improve resistance to weathering, insects, and fire increases environmental impacts.



1 kg
TIMBER

STEEL

An alloy formed by heating iron ore, carbon, and other elements under high temperatures, steel is the strongest of the common structural materials per unit of mass, and is also quite ductile, meaning it can bend without breaking. Since industrial production began in the nineteenth century, structural steel enabled smaller members, longer spans, and taller buildings, giving rise to tall and dense cities.

Manufacturing new steel directly emits significant greenhouse gases, as well as those from the fuel needed for heating. Recycling steel has much lower impacts, and recycled steel is equally strong and widely used. Steel loses strength at high temperatures, requiring fire protection and adding to its environmental impact.



1 kg
STEEL

CONCRETE

Stone, sand, and water—the raw materials for concrete—are found nearly everywhere and when bonded by the hardening of cement become solid and strong. Common Portland cement is made by heating limestone, clay, and other ingredients until they split into calcium oxide and carbon dioxide, resulting in high embodied carbon.

For hundreds of years, buildings used concrete only in compression. The nineteenth century brought the addition of steel reinforcing for improved tensile strength, giving way to new concrete forms. Solid and fireproof, concrete is similar in strength to strong woods, though not as strong as steel. Concrete's internal reinforcing is vulnerable to corrosion from water, as well as to increased carbonation and chlorination caused by climate change. To address climate change, a more resilient built environment needs more resistant reinforcing details and lower-carbon cements.



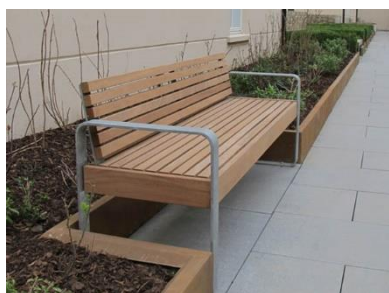
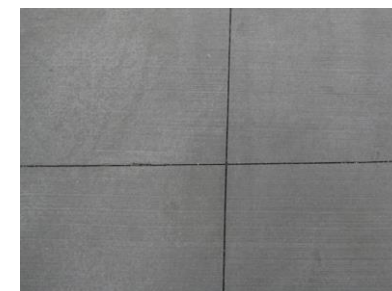
1 kg
CONCRETE

MASONRY

One of the oldest forms of construction, masonry materials come from the earth and are laid by human hands. Natural stone is quarried, shaped, and transported. Brick and terracotta are made by mixing clay and water and then heated to become hard. Hand molds and the sun have given way to industrial extruders and kilns, adding somewhat to the carbon footprint. Very strong in compression, stacked masonry units are used in foundations, walls, arches, vaults, and soaring domes. While load-bearing masonry is very durable, withstanding the ravages of weathering and time, steel reinforcement is necessary in contemporary construction, especially in seismic zones.



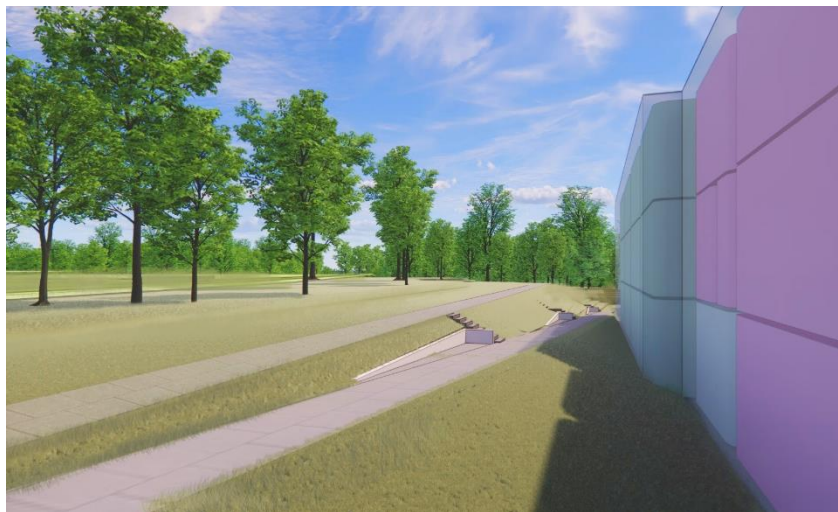
1 kg
MASONRY



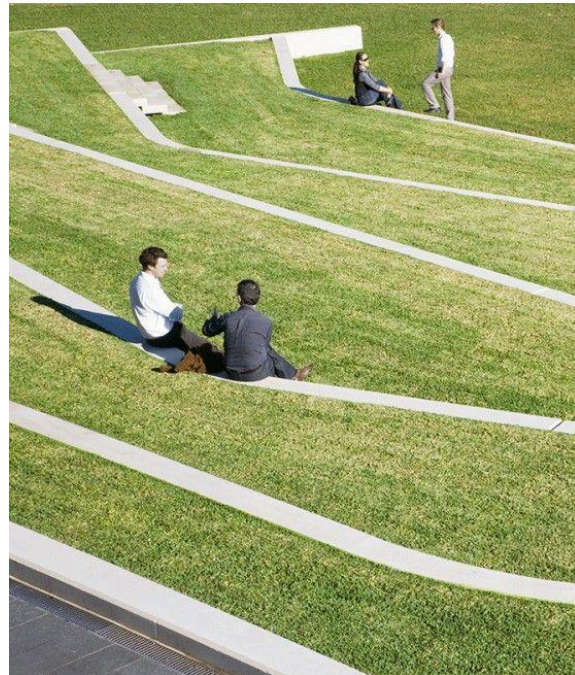
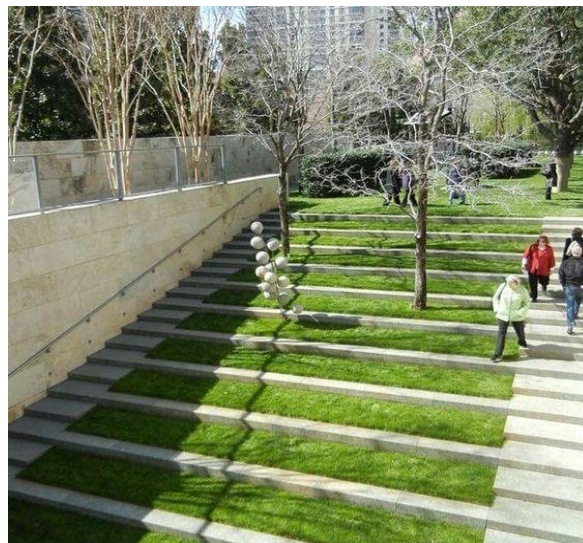
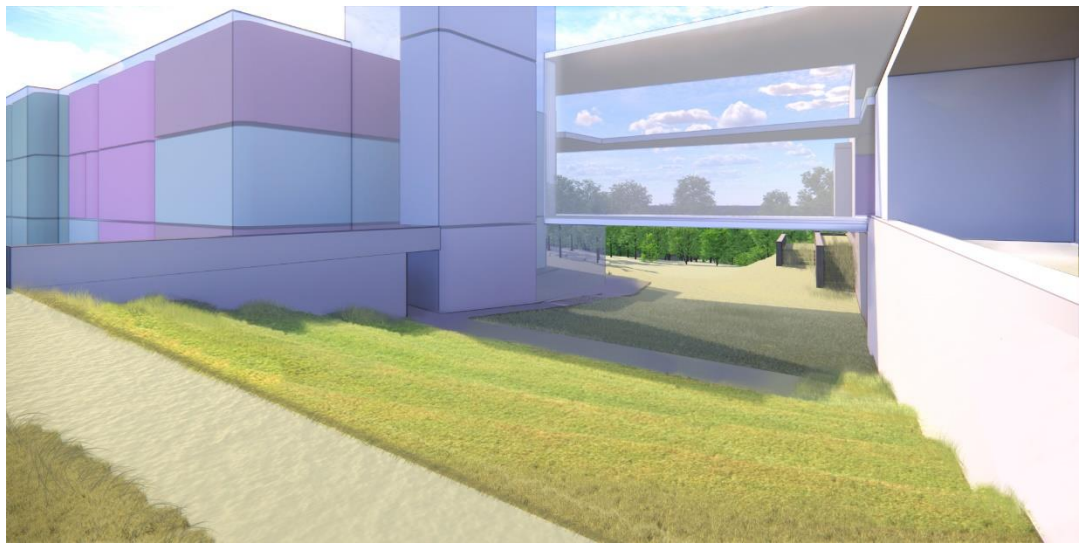


PROMENADE AND FRONT ENTRANCE PLAZA

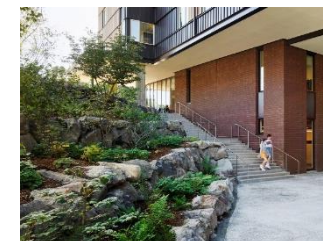


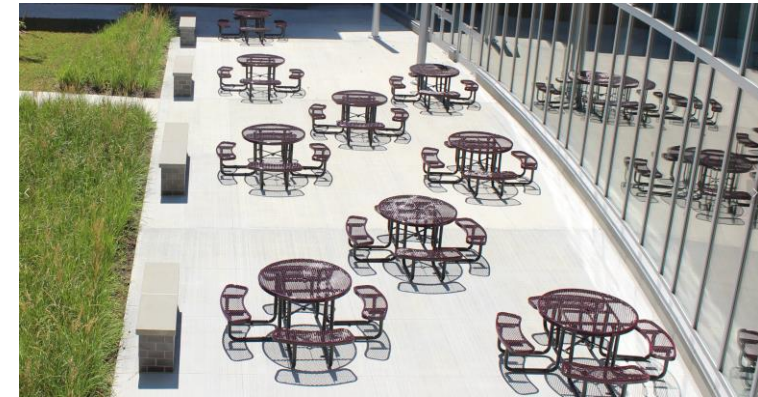


OUTDOOR CLASSROOMS



AMPHITHEATRE





OUTDOOR MULTI-USE SPACE



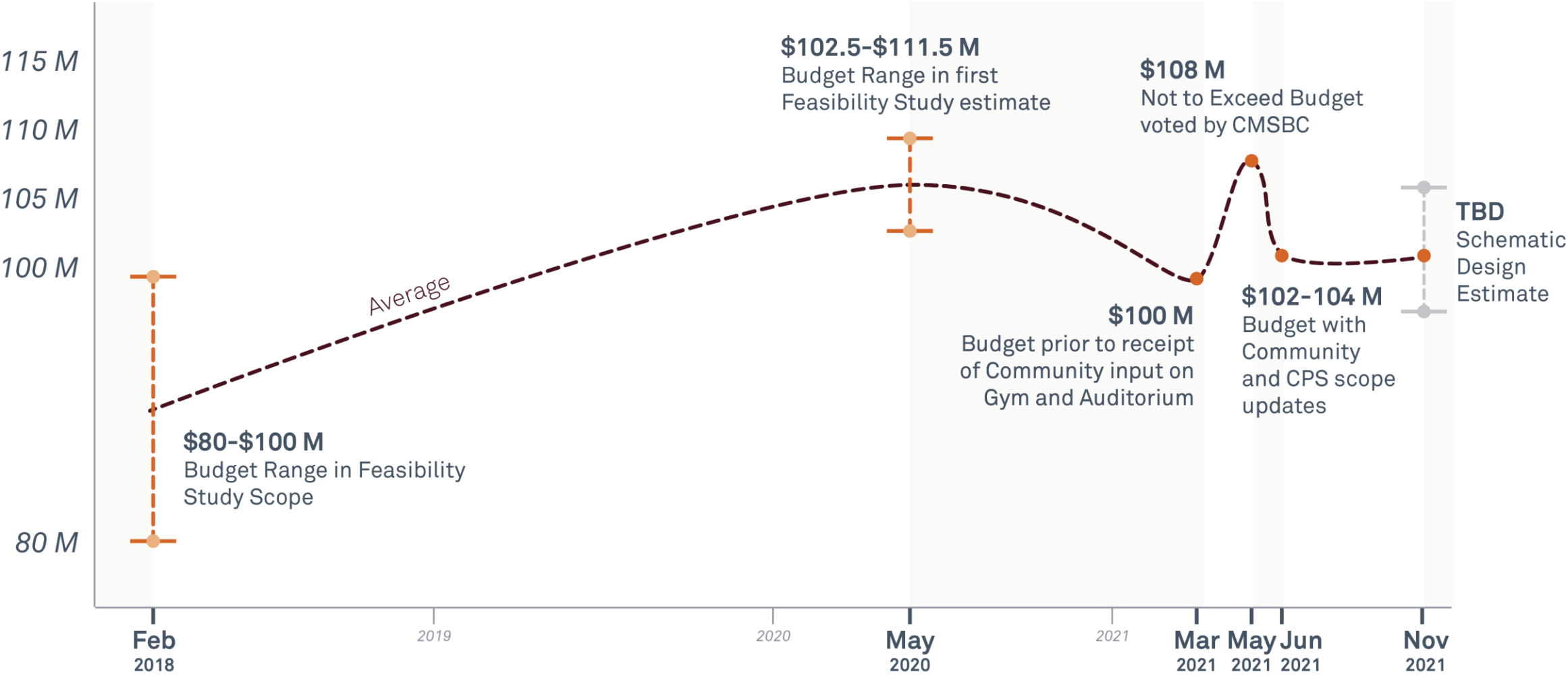
ILLUSTRATIVE SITE PLAN



Budget Discussion

Concord Middle School

Project Budget Change



Cash Flow

Concord Middle School

July 31, 2021

Concord Middle School
Estimated Project Cash Flow Thru SD Phase



	Month	OPM	Designer & Consultants	Commissioning Agent, FF&E & Misc.	Construction	Contingency	Estimated Expenditures	Actual Expenditures	Estimated Cumulative Expenditures	Actual Cumulative Expenditures
Feasibility Study	1 Oct-19	\$38,290					\$38,290	\$25,110	\$38,290	\$25,110
	2 Nov-19	\$20,550					\$20,550	\$34,595	\$58,840	\$59,705
	3 Dec-19	\$18,790					\$18,790	\$20,660	\$77,630	\$80,365
	4 Jan-20	\$18,790	\$75,645				\$94,435	\$88,210	\$172,065	\$168,575
	5 Feb-20	\$18,790	\$151,290				\$170,080	\$167,735	\$342,145	\$336,310
	6 Mar-20	\$24,070	\$161,376				\$185,446	\$101,535	\$527,591	\$437,845
	7 Apr-20	\$22,670	\$105,903				\$128,573	\$110,125	\$656,164	\$547,970
	8 May-20	\$21,590	\$106,361				\$127,951	\$100,465	\$784,115	\$648,435
Pause	9 Jun-20	\$21,590	\$96,275				\$117,865	\$73,474	\$901,980	\$721,909
	10 Jul-20	\$22,290	\$96,275				\$118,565	\$15,520	\$1,020,545	\$737,429
	11 Aug-20	\$24,430	\$69,318				\$93,748	\$3,785	\$1,114,293	\$741,214
	12 Sep-20	\$53,450	\$26,957				\$80,407	\$720	\$1,194,700	\$741,934
	13 Oct-20						\$0	\$2,590	\$1,194,700	\$744,524
	14 Nov-20						\$0	\$0	\$1,194,700	\$744,524
Restart Feasibility Study	15 Dec-20						\$0	\$16,798	\$1,194,700	\$761,322
	16 Jan-21						\$0	\$0	\$1,194,700	\$761,322
	17 Feb-21						\$0	\$0	\$1,194,700	\$761,322
	18 Mar-21						\$0	\$0	\$1,194,700	\$761,322
	19 Apr-21						\$0	\$0	\$1,194,700	\$761,322
	20 May-21						\$0	\$0	\$1,194,700	\$761,322
Schematic Design	21 Jun-21						\$0	\$2,400	\$1,194,700	\$763,722
	22 Jul-21						\$0	\$69,318	\$1,194,700	\$833,040
	23 Aug-21						\$0	\$0	\$1,194,700	
	24 Sep-21						\$0	\$0	\$1,194,700	
	25 Oct-21						\$0	\$0	\$1,194,700	
	26 Nov-21						\$0	\$0	\$1,194,700	
	27 Dec-21						\$0	\$0	\$1,194,700	
	Subtotal for FS/ SD	\$305,300	\$889,400	\$0			\$1,194,700			

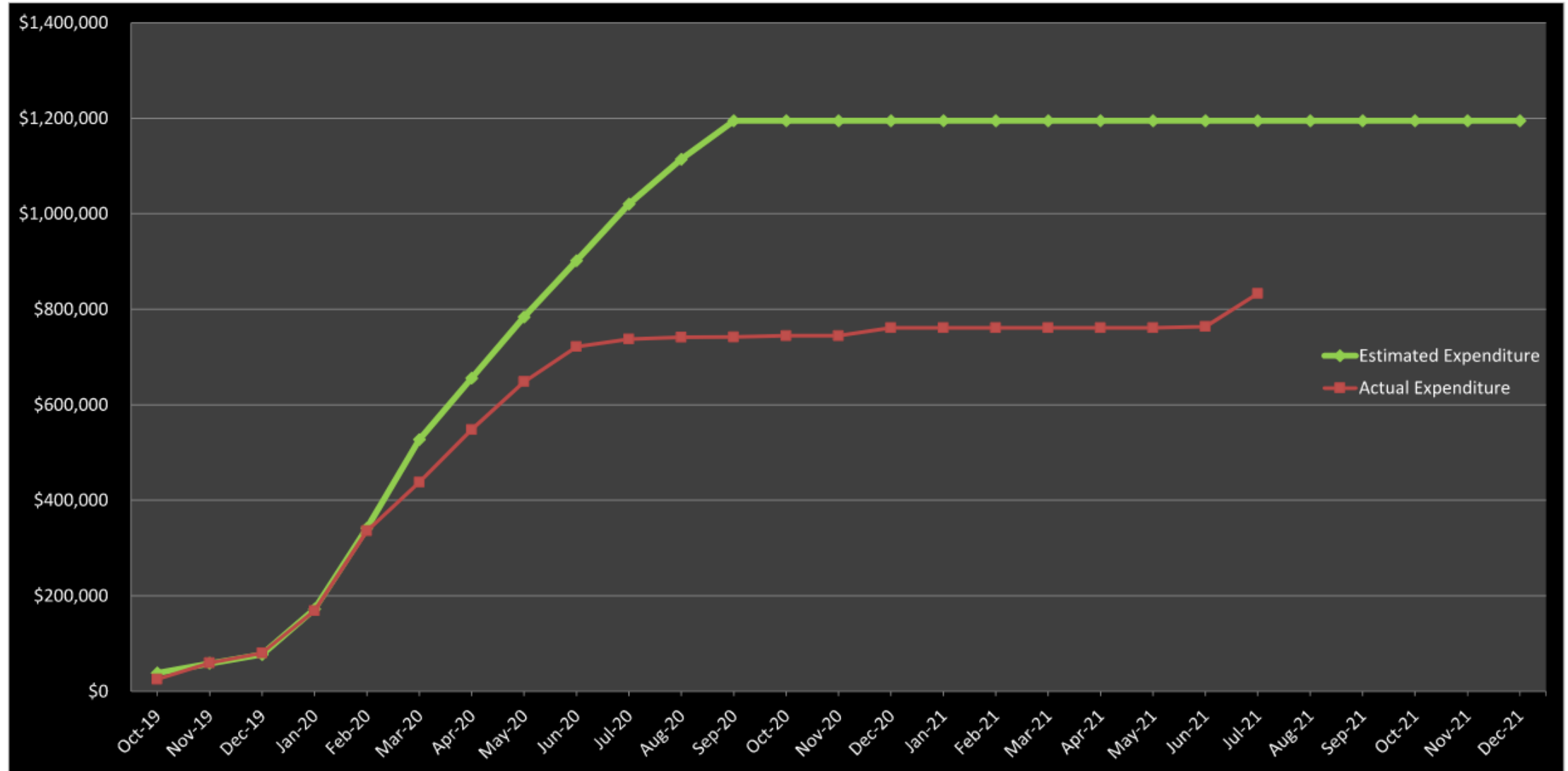


July 31, 2021

Town of Concord
Concord Middle School
Estimated Project Cash Flow Graph



Hill International



The background is a stylized map. It features green areas representing parks or fields, white lines representing roads and paths, and some grey areas representing buildings or paved surfaces. There are two orange markers: one in the top right corner shaped like a house, and one in the bottom left corner shaped like a cross.

THANK YOU

Next meeting August 5, 2021