

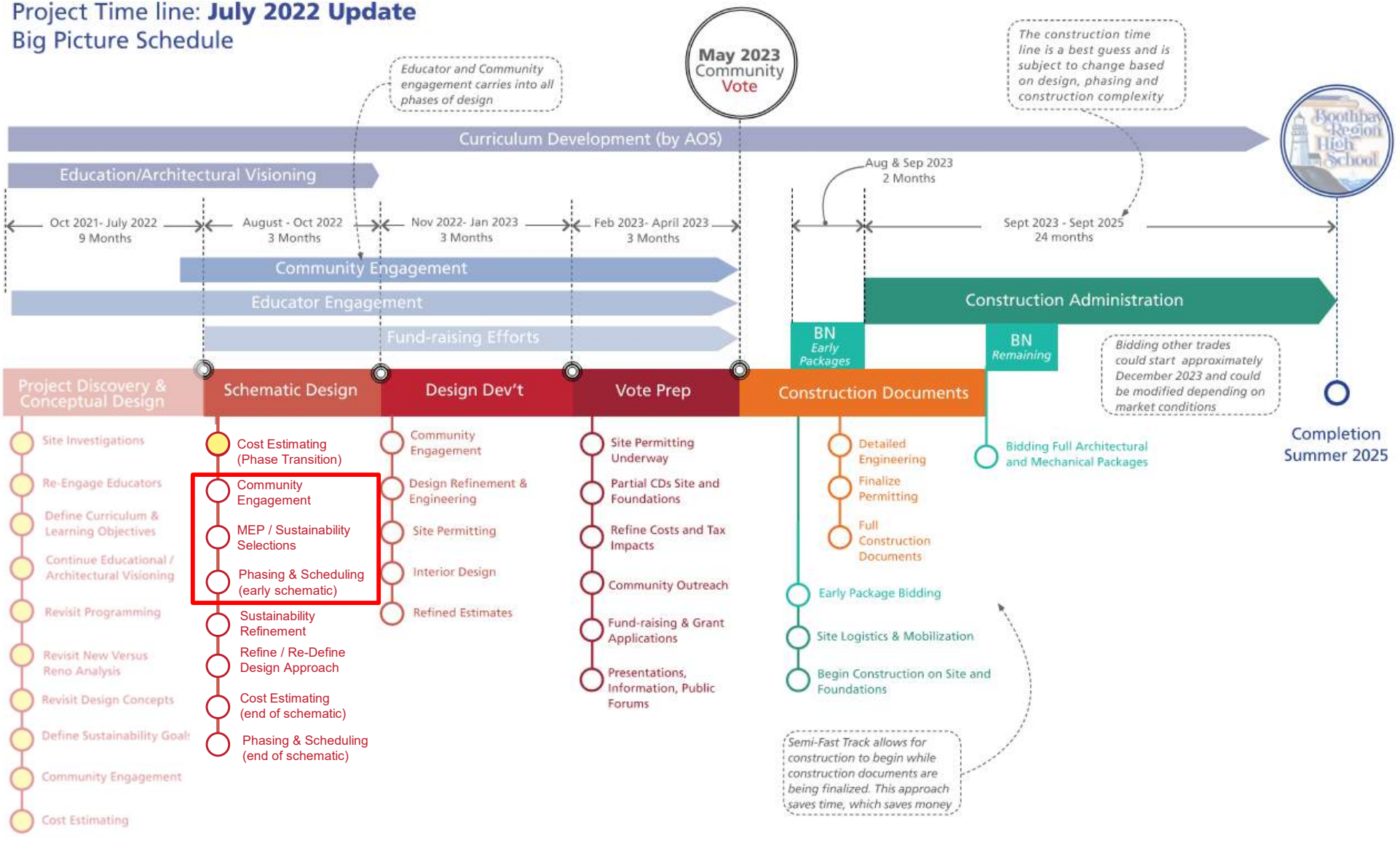


Boothbay-Boothbay Harbor CSD Building Exploratory Committee

July 2022

LAVALLEE | BRENSINGER ARCHITECTS

Project Time line: **July 2022 Update**
Big Picture Schedule



MEETINGS + TASKS: August

DESIGN REVIEW MEETING (Preliminary Schematic Package):

- Review preliminary Schematic Design Package
- Review plans, renderings, and elevations.
- Confirm room names and room numbering system
- Review sustainability measures (Occupant comfort and teaching tool)

POTENTIAL DATE: Early August (Date TBD)

ATTENDANCE: Principals, Superintendent, Facilities Director, Architects

FACILITIES TEAM MEETING:

- Review Mechanical, Electrical, and Plumbing systems
- Review loading dock, dumpster locations, custodial and academic storage, and maintenance building
- Review sustainability measures (Building performance)

POTENTIAL DATE: Late August (Date TBD)

ATTENDANCE: Superintendent, Facilities Director, Architects, Engineers

SUSTAINABILITY SUB-COMMITTEE MEETING (meeting #4):

- Finalize selection of HVAC system to be recommended to BEC (August) for final approval

POTENTIAL DATE: **Mid** August (Date TBD)

ATTENDANCE: Superintendent, Facilities Director, Sustainability Sub-Committee, Architects, Engineers

Sustainability Sub-Committee

Sustainability: Goals

#1: TARGET EUI of 23 (Energy Use Intensity)

- Above and beyond the minimum energy code requirement
- Energy load reduction throughout building
- Highly efficient Mechanical, Plumbing, and Electrical systems
- Highly efficient building envelope

#2: ZERO ENERGY GOAL VIA ON-SITE ENERGY HARVESTING (roof mounted solar panels)

- Design the building for solar panels to be installed either on day one or a future date
- Design the solar array to bring the overall EUI down to zero

#3: REDUCE DEPENDECY ON FOSSIL FUELS

- Design the buildings HVAC system to include highly efficient heat pump systems to provide most of the buildings heating and cooling needs.
- Heat pumps to be either ground source (geothermal) or air source (variable refrigerant flow)

#4: USE SUSTAINABILITY FEATURES AS A TEACHING TOOL

- Allow community and students to observe and learn about the different sustainable features in the building and on site
- Display the buildings energy performance in the main lobby

Sustainability: HVAC Systems

	Existing High School (projected)	**Boiler / Chiller** Code min (baseline)	**Boiler / Chiller** High Performance	**VRF** Air Source Heat Pump	**Geothermal** Ground Source Heat Pump
First Cost	---------	**$5,376,459**	$5,659,460	$5,558,190	$6,061,720
Annual Energy Cost	$131,172	$160,000	$136,000	$115,000	**$111,000**
Building size (SF)	67,791 SF	100,000 SF	100,000 SF	100,000 SF	100,000 SF
Total Energy Cost ($/SF per year)	$1.93	$1.60	$1.36	$1.15	**$1.11**
Ballpark Payback (years)	---------	---------	11.8	**4.0**	14.0
Life Cycle Cost (25 years)	---------	$8,700,000	$8,600,000	**$8,100,000**	$8,500,000
Replacement Cost (at year 20)	---------	$700,000	$700,000	$800,000	$700,000
EUI (kBTU/SF per year)	68.9	40	28	21	**20**

- These are ballpark calculations and are provided for relative comparison only. This is to compare one design option to another and is not intended as an accurate prediction of energy use. Detailed energy modeling is required in order to predict accurate energy use.
- Calculations above ignore any available rebates.
- Existing high school assumes electricity at $0.18/KWH and #2 oil at $2.99/GAL

Sustainability: HVAC Systems

Geothermal
(Ground Source Heat Pump)

PROS

- Very efficient
- Proven technology
- Minimal fossil fuels required
- Smaller mechanical room
- Future modifications are simple
- Less impactful maintenance w/ distributed pumps

CONS

- Can be noisy
- Requires refrigerant lines throughout building (not as much as VRF)

VRF
(Air Source Heat Pump)

PROS

- Very efficient
- Rebates available through Efficiency Maine
- Smaller mechanical room
- Minimal fossil fuels required
- Avoids added cost from geothermal (No bore fields or circulating pumps)
- Heat pumps are quite

CONS

- Requires refrigerant lines throughout building
- Requires sophisticated service personnel
- Complex and proprietary controls
- Requires a larger emergency generator

Conceptual Design: Scope & Costs

Detailed Estimate: Summary

	PHASE 1	PHASE 2
UPFRONT COSTS	$105,000	$40,000
FURNISHING AND EQUIPMENT	$5,348,923	$2,297,075
CONTINGENCIES	$5,848,274	$2,333,031
PROFESSIONAL FEES	$4,379,998	$1,999,594
INDEPENDENT CONSULTANT FEES	$1,137,082	$395,000
SITE DATA	$262,000	$64,000
CONSTRUCTION COSTS	$58,982,744	$23,330,314
TOTAL PROJECT ESTIMATE	**$76,064,021**	**$30,459,014**

NOTE: These numbers include a high percent of design contingencies. As the project develops, the percentage of design contingencies should be lowered

Total project estimate for phase 1 includes approximately $7,500,000 in contingencies (roughly 10% of total project costs)

Total project estimate for phase 2 includes approximately $3,000,000 in contingencies (roughly 10% of total project costs)

Phasing: Scope Descriptions (Phase 1)

New High School Addition (102,000 SF)

- Connected to existing elementary school
- Major renovation to main lobby and admin area of BRES (5,300 SF +/-)
- Abandon in place the kitchen, cafeteria, and maintenance area of BRES

Moisture Mitigation and Rust Removal at BRES

- Install ducted dehumidifiers
- Remove areas of rust on the structural steel and re-galvanize
- Relace all ACT ceiling and light fixtures on the lower level
- Add LVT flooring OVER all VCT flooring on the lower-level classroom wing
- Replace all carpet with new carpet tile on the lower-level classroom wing

Security Upgrades at BRES

- Modify all operable windows to a 4-inch opening maximum
- Install impact resistant film to all exterior glazing located at ground level
- Install HVAC emergency shut-off stoppers

Unit Ventilator and other HVAC upgrades at BRES

- Replace louvers with half-height louvers and provide blank off panels
- Provide mini split in the existing CPU lab

Electrical Upgrades at BRES

- Replace canopy lights at all exterior canopies (excluding main entrance)
- Provide new power and data receptacles throughout BRES as needed

Roofing Repairs at BRES

- Replace damaged plywood sheathing above room 231
- Apply liquid membrane flashing to all concrete parapets (under review)

Plumbing Repairs at BRES

- Replace all original gate valves at the lower level only
- Abandon/replace copper pipe distribution lines at the lower level only. (Owner to determine if new piping is PEX, copper, or CPVC)
- Abandon/replace cast iron wastewater piping at the lower level only. New lines to be schedule 40 PVC pipes.

New Maintenance Building

- Approximately 8,000 SF free standing pre-fabricated structure

Fuel Tank Replacement at BRES (10,000-gallon fuel tank)

TOTAL PROJECT ESTIMATE (PHASE 1): $76,064,021

Phasing: Scope Descriptions (Phase 2)

Major renovations and additions to BRES

- Middle school addition (6,400 SF single story)
- Relocate all student occupied areas from the lower level where they do not have access to natural light
- Renovate the abandoned kitchen, maintenance area, and cafeteria into middle school related program.
- Renovate science labs
- Provide new public entrance to multi-purpose room to meet code requirements
- Add 2-hour fire walls to meet code requirements
- Replace elevator in-place (identified in 3rd part report)

Locker Room and Multi-Purpose Room Renovations at BRES

- Complete renovation of both locker rooms
- Sand and refinish multi-purpose room floor. Paint new game lines
- Add 14 solar tubes to the multi-purpose room roof / new light fixtures
- Replace operable wall and existing scoreboard (provide 2nd scoreboard)
- Replace EPDM roofing and provide structural improvements to the gym roof (identified in 3rd party report)

Bathroom Renovations at BRES

- Renovate and enlarge all existing single user bathrooms to meet ADA
- Renovate all gang bathrooms into single user bathrooms

Plumbing Repairs at BRES

- Replace all original gate valves at the upper level only
- Abandon/replace copper pipe distribution lines at the upper level only. (Owner to determine if new piping is PEX, copper, or CPVC)
- Abandon/replace cast iron wastewater piping at the upper level only. New lines to be schedule 40 PVC pipes.

Electrical Upgrades at BRES

- Replace all existing fixtures at the upper level only.

Other Improvements

- Repoint areas of brick along the perimeter of BRES
- Replace all exterior caulking and sealant at BRES
- Provide new emergency duress alarm at BRES
- Provide safety signage throughout BRES
- Replace insulation at sloped roofs (identified in 3rd part report)
- Add roof trusses at unbalanced snow loads (3rd party report)
- Replace roof sheathing w/ metal decking at flat roofs (3rd party report)

Athletic Field

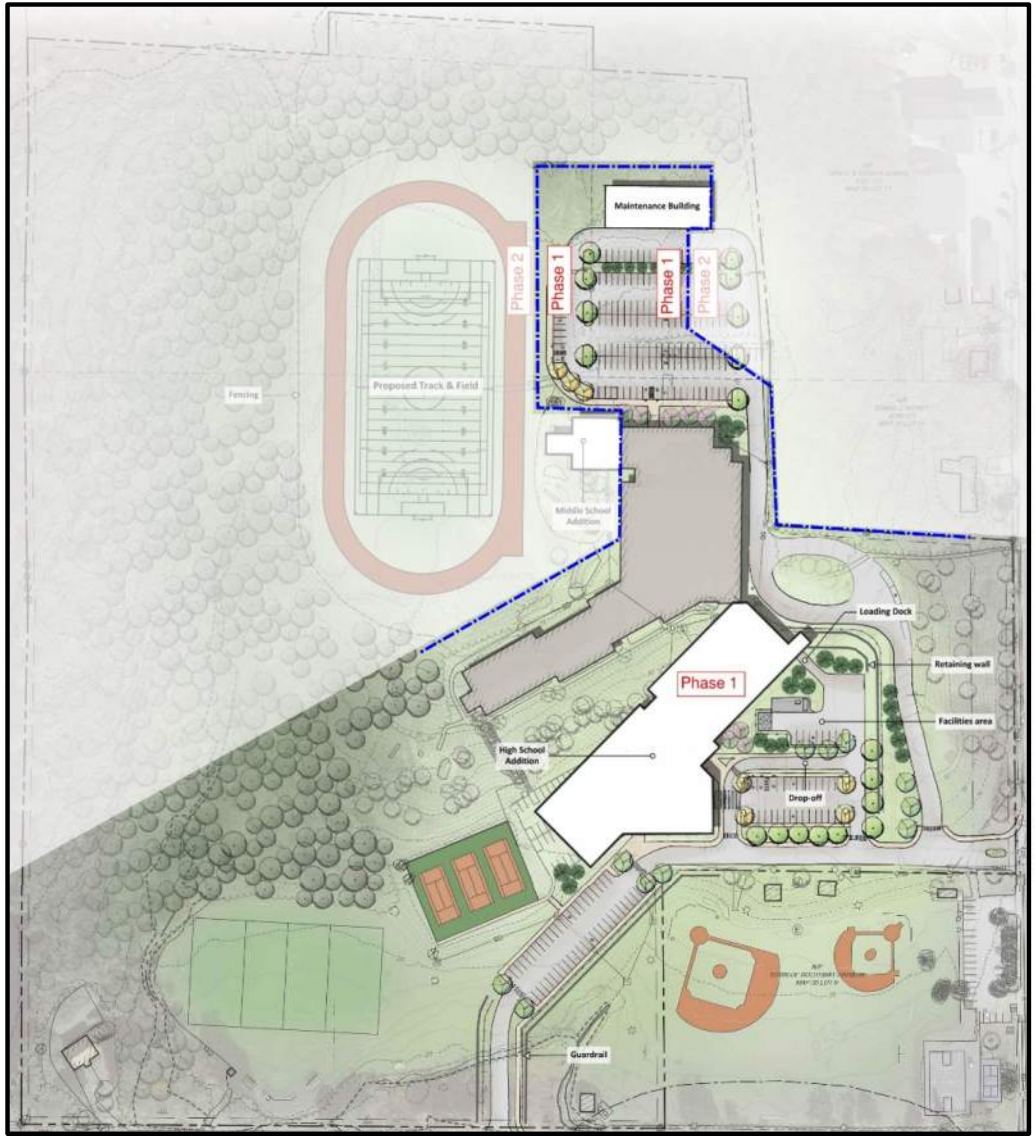
- Turf field / final scope to be determined

TOTAL PROJECT ESTIMATE (PHASE 2): $30,459,014

Phasing: Site

PHASE 1:

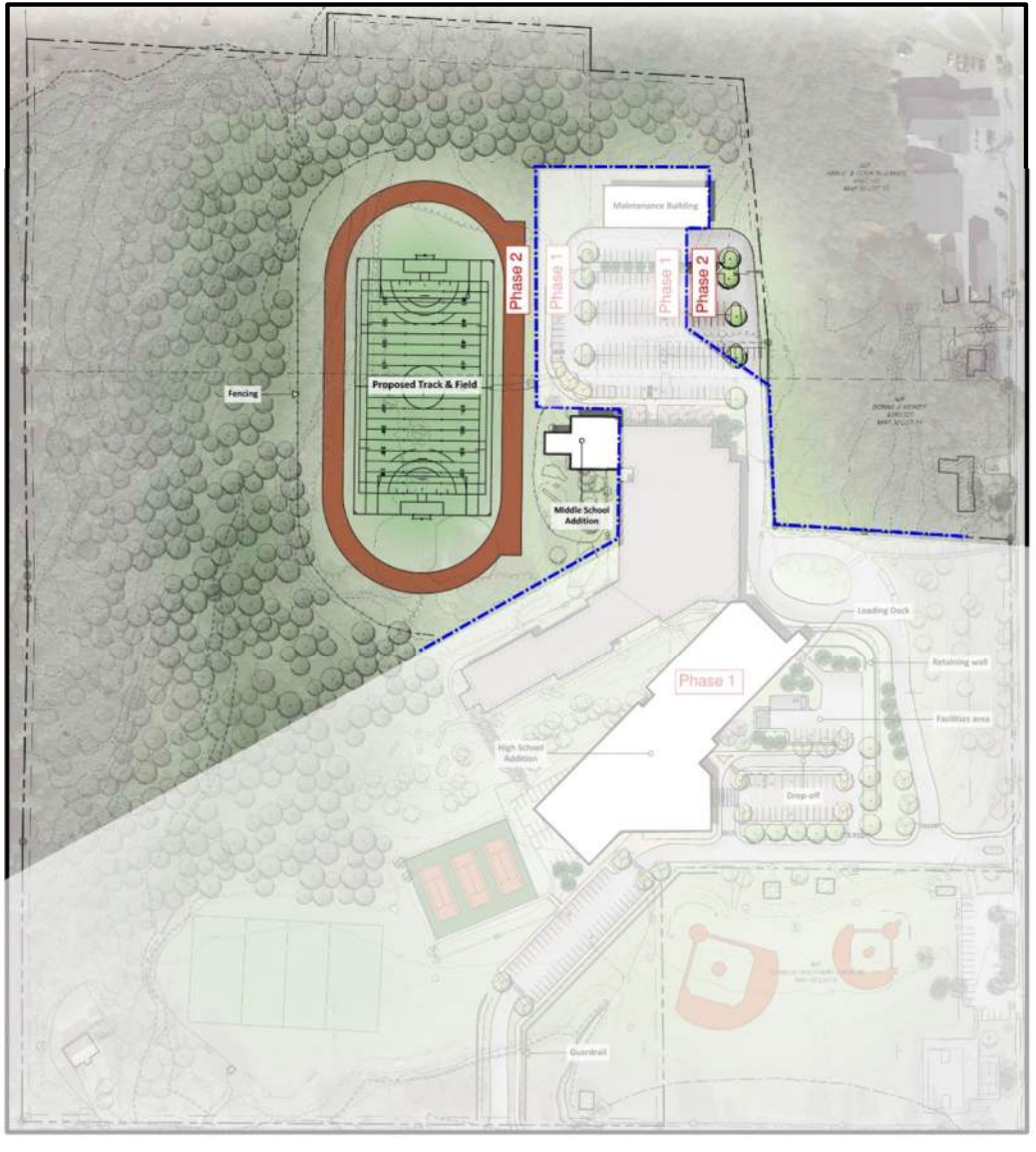
- Site work associated with high school addition (cut/fill, retaining walls, etc.)
- Access road and parking heading to Emery Lane
- All parking and vehicular circulation associated with high school addition
- Access drive to BRES
- Partial parking lot extension North of BRES
- Site work associated with maintenance building



Phasing: Site

PHASE 2:

- Track and field (turf)
- Remaining portion of North parking lot
- Site work associated with middle school addition



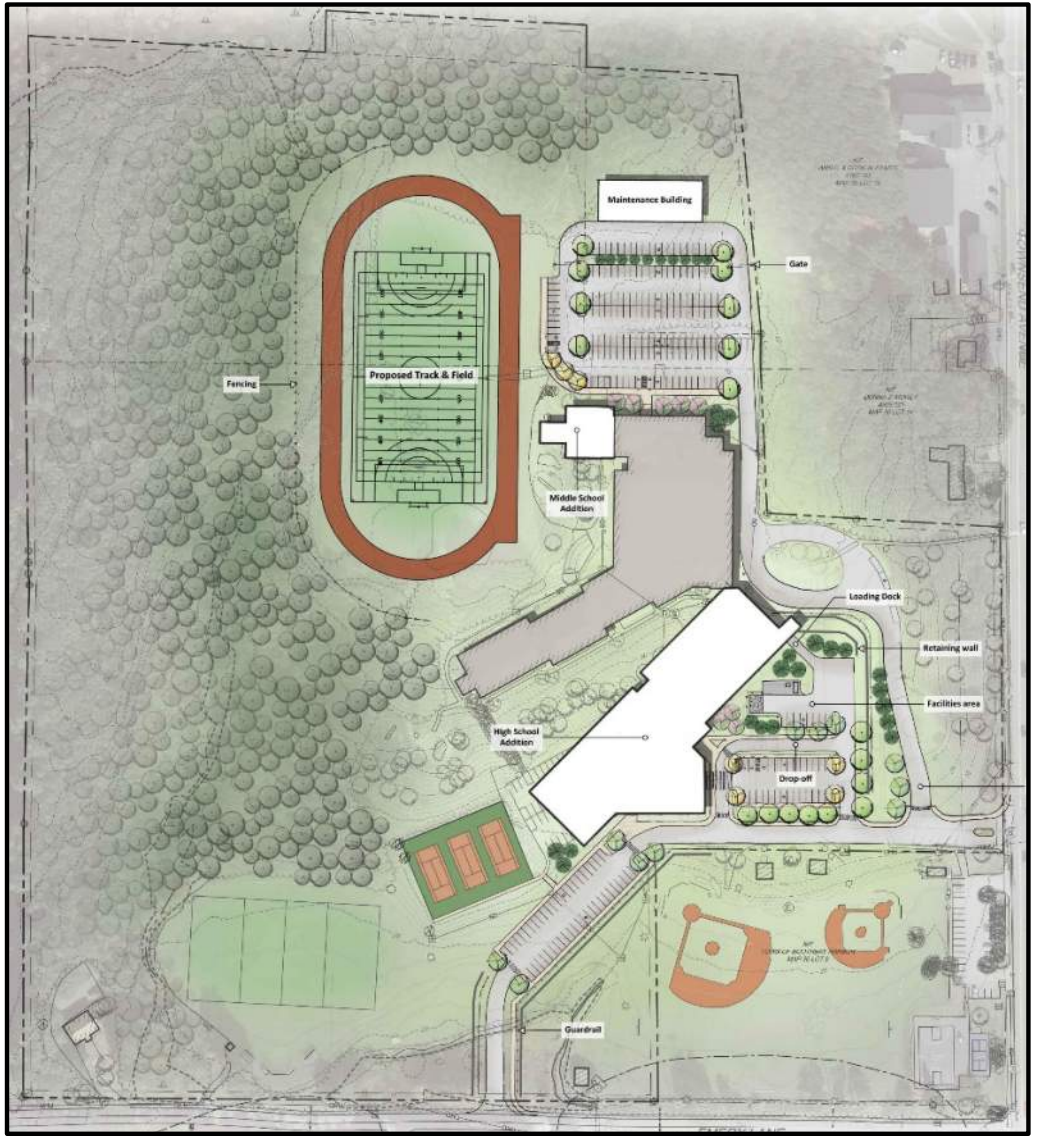
REQUEST APPROVAL FROM THE BEC TO MOVE FORWARD WITH THE PROJECT INTO SCHEMATIC DESIGN

Schematic Design: Design Update

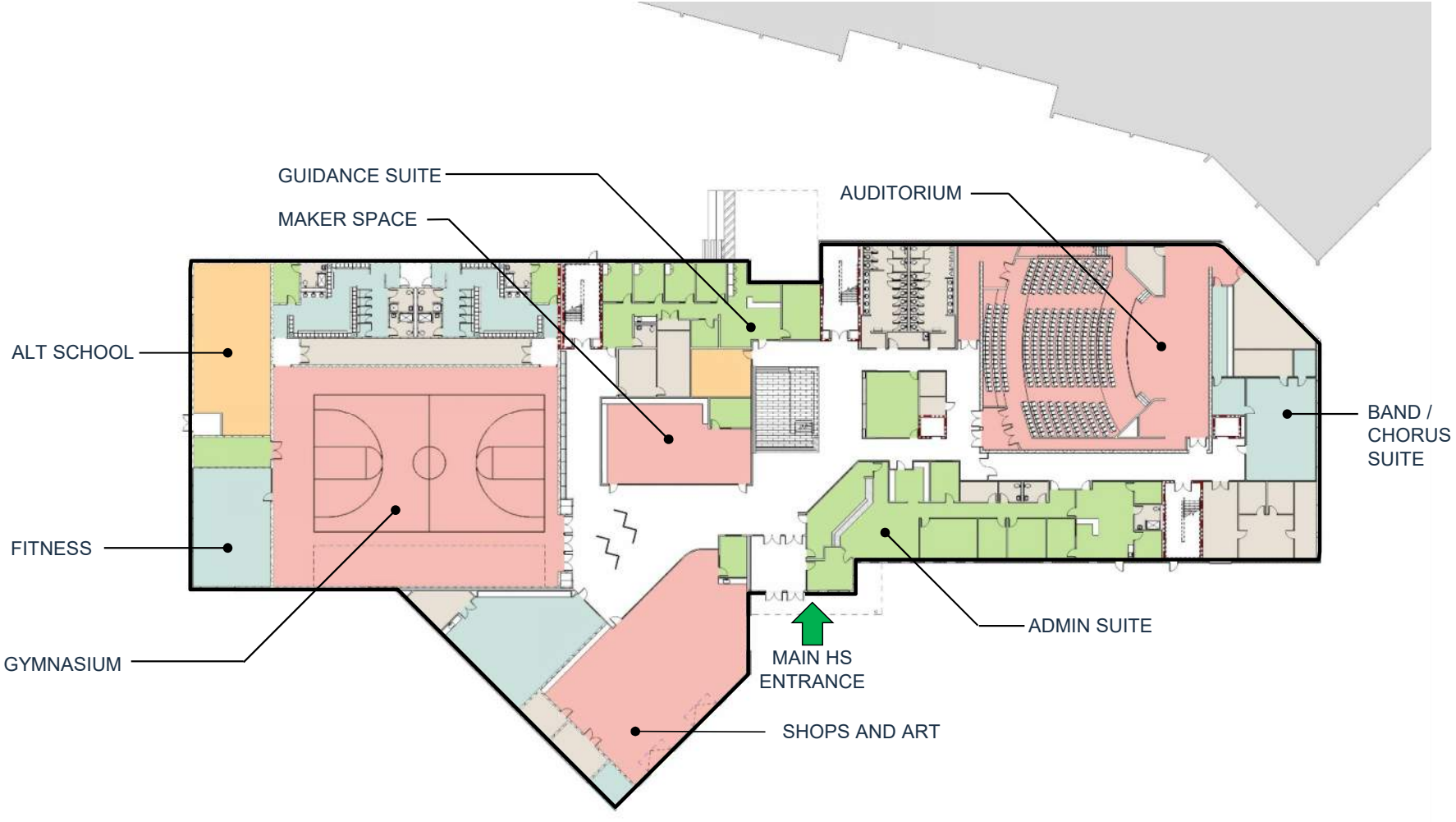
Design Updates:

CHANGES

- 102,000 SF (about a 5,000 SF reduction)
- Library now located on level 2
- Life skills moved to level 3
- Connection between BRES and BRHS is through a staff occupied space
- Social Stair has been further developed
- Mechanical central plant revisions
- Interior design has started
- Exterior design has further developed



Design Updates: Plans



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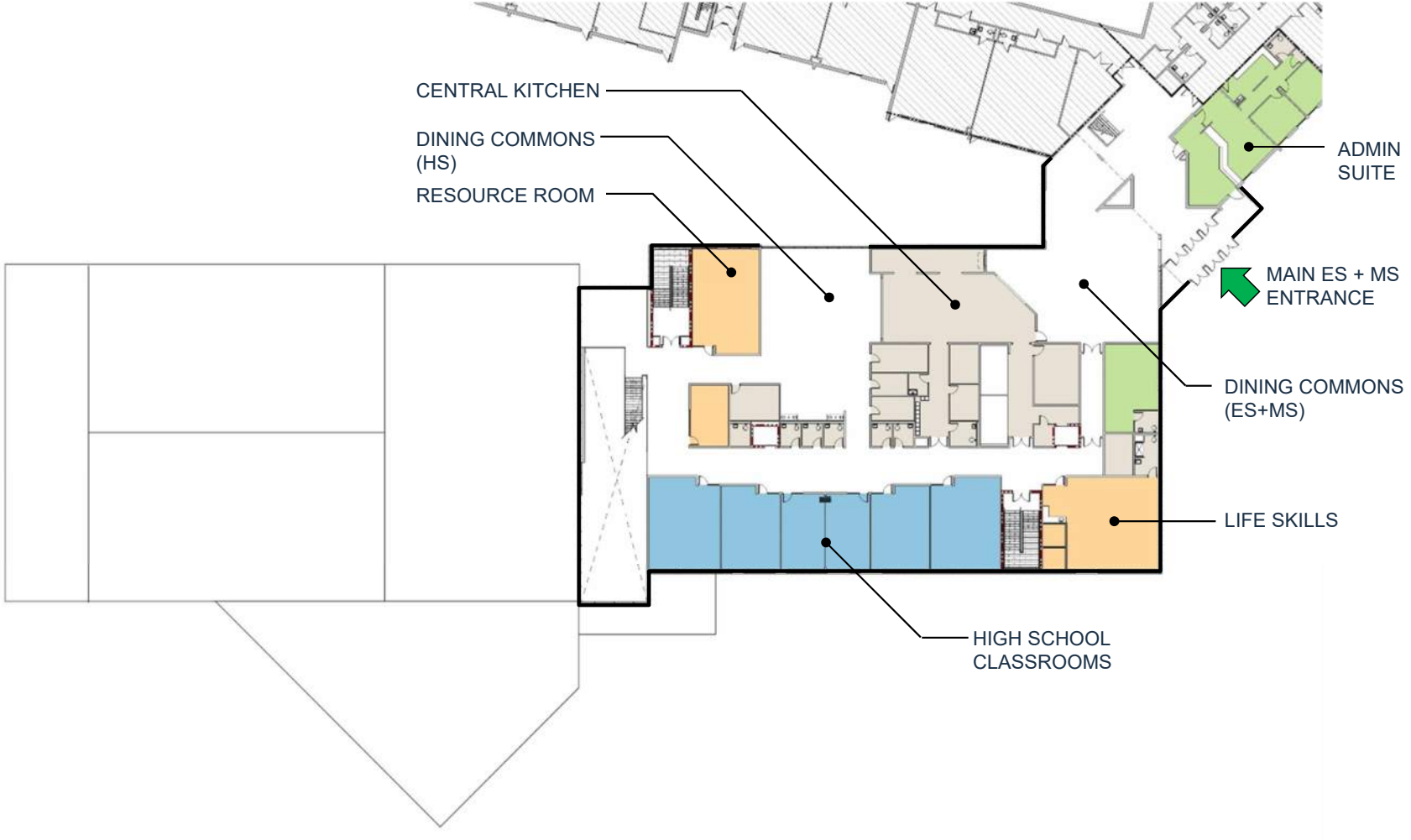

Design Updates: Interior Renderings

View: LVL 1 looking at the Social Stair

View: LVL 2 standing on the sky bridge looking towards the library

Design Updates: Interior Renderings

View: LVL 1 in front of main office looking towards the Social Stair

View: LVL 1 in front of main office looking towards the gym

Design Updates: Interior Renderings

View: LVL 1 from the main entrance looking towards the social stair

View: LVL 1 in front of the gym looking towards the maker space and the Social Stair

Design Updates: Interior Renderings

View: LVL 2 from the open gathering area looking towards the science wing and the Social Stair

View: LVL 3 from the top of the Social Stair looking back towards the main entrance

Design Updates: Interior Renderings

View: LVL 3 overlooking the Social Stair

View: LVL 3 looking back towards some of the spill out seating from the dining commons

Community Meetings

Community Meetings: Boards (Drafts)

MEETINGS + TASKS: August

Meeting #2 will be a community information meeting with a presentation of current design concept based upon analysis and discussion of information and feedback gathered to date

POTENTIAL DATES: Early August (Date TBD)

OTHER METHODS TO REACH OUT TO THE COMMUNITY:

- Video Tour (Broadcast locally and online)
- More In-Person Tours of the Existing high School
- Superintendent Video Blogs (monthly updates)
- Presentations at Selectboard Meetings (February)
- “Ask the Architect” events
- Information handouts / flyers

Virtual Walking Tour?