

Town of Concord

Concord Middle School

Middle School Building Committee 09.02.2021



EWING SMMA

Project Goals Recap

Total Project Cost Range per RFS **\$80-\$100 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

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



Design for Net Zero Energy



Primary Goal:



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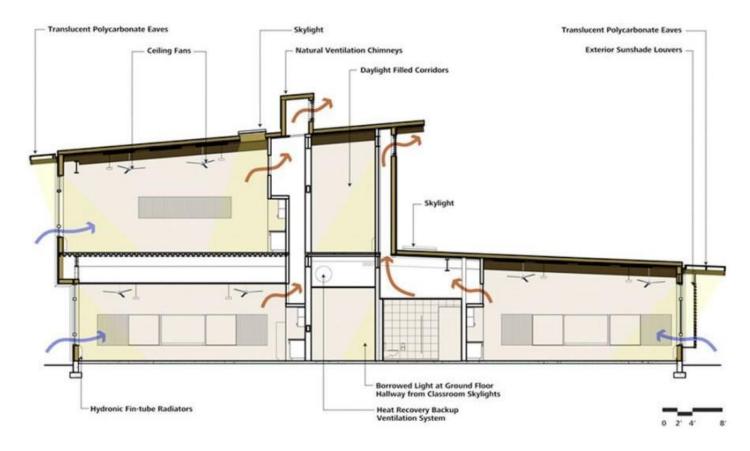


Sustainability Subcommittee

Meetings: 08/12 and 08/25 Building Mechanical Systems, EV Charging, Energy Performance / EUI

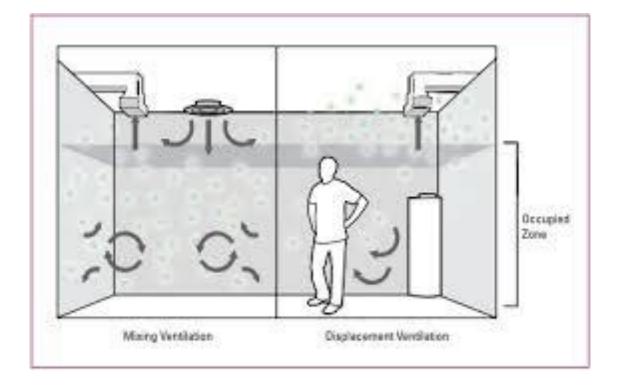


Natural Ventilation

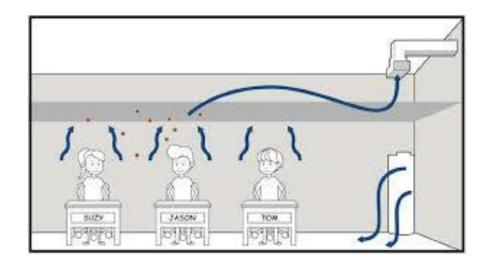


- Air inlets at windows or dampered openings
- Air outlets at roof to enhance airflow
- Fan assist for hybrid ventilation
- Warm and humid days require air conditioning

Displacement Ventilation



- 63-68°F Supply Air
- Supply air is cooled then reheated
- Excellent ventilation effectiveness
- Perimeter heat source required



Air Conditioning vs. Dehumidification

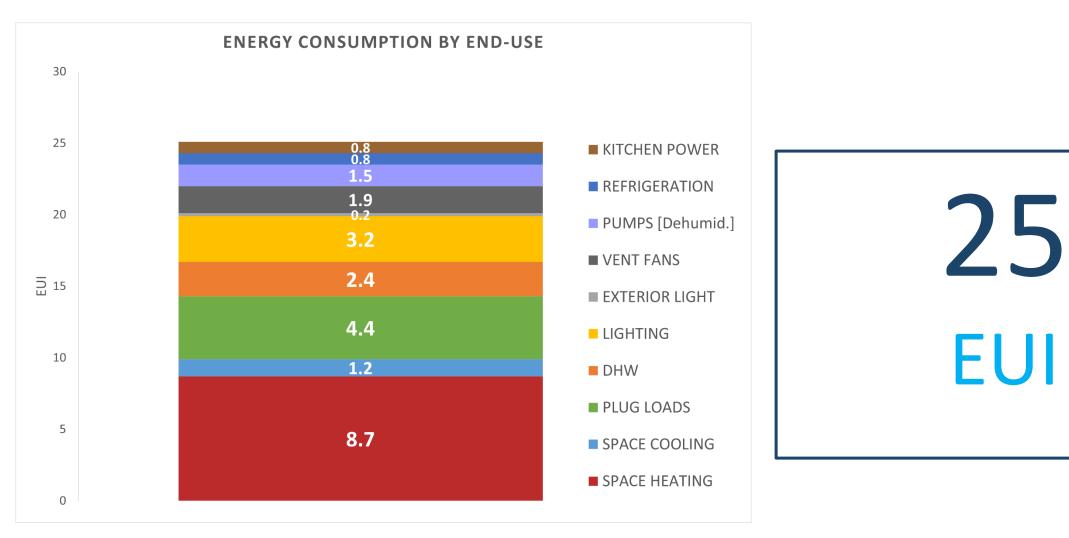
Air Conditioning

- Temperature control at peak cooling load
- Can cool space to 70°F +/-
- Dehumidification of space moisture loads
- Airflow is approximately 1 cfm/sf

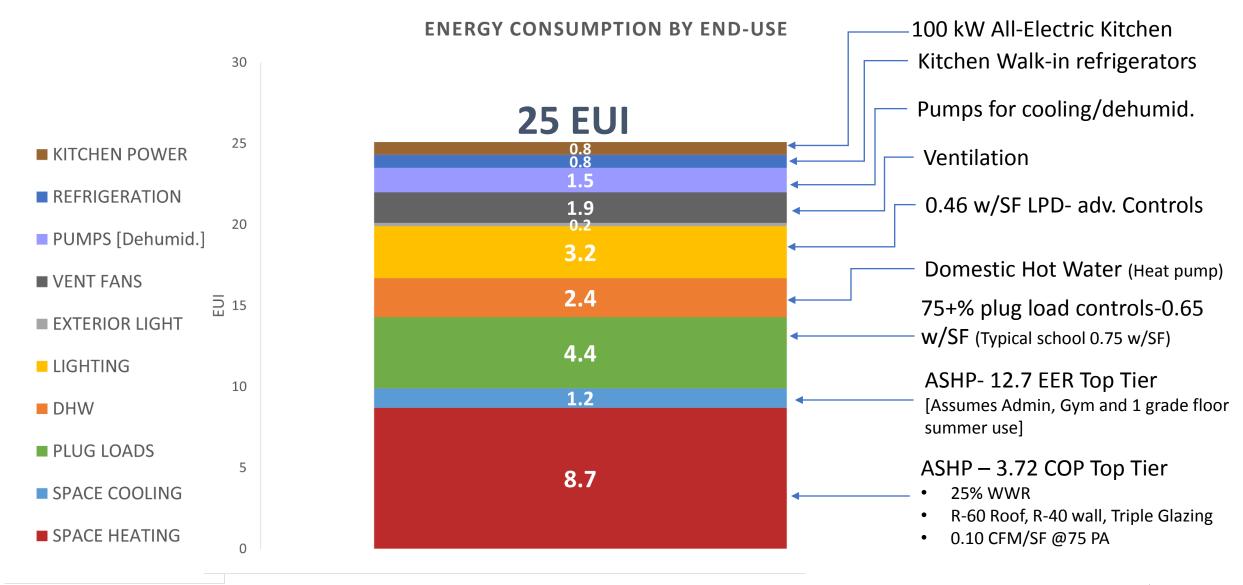
Dehumidification

- Temperature control limited at peak cooling load
- Space temperatures of 75-78°F at peak
- Dehumidification of space moisture loads
- Airflow is ~50% of full cooling

CMS EUI Update



CMS EUI Goal Assumptions



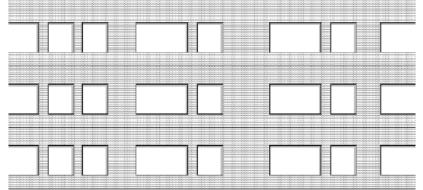
Recommendations

CMS Sustainability Subcommittee - 8/25 SD recommendations

Opt#		Subcommittee Recommendation
	Request to the Design Team	
1	Further investigate a hybrid natural ventilation strategy (beyond opening windows).	Not Recommended
2	Further investigate a complete displacement ventilation system.	Not Recommended
3	Present options for a partial displacement ventilation system.	Recommended
4	Present options for a dehumidification only system (no air conditioning).	Not Recommended
5	Further investigate a partial air conditioning system - heat pump sizing based or heating demand, which is lower than the air condition peak, so there would be no air conditioning at the extreme.	Not Recommended
	Reduce the number of EV charging stations from the requirements listed in the EZ-Code to 2% installed spaces connected to building (meet LEED goal).	Recommended
7	Allow mechanicals systems to be placed on the roof.	Recommended
8	Target EV charging infrastructure for 10% of parking as EV ready.	Recommended

Design Subcommittee

Meetings: 08/19 and 08/31 Fenestration, Brick Pattern, Auditorium Design



NORTH ELEVATION

Wall Area/Classroom: 350

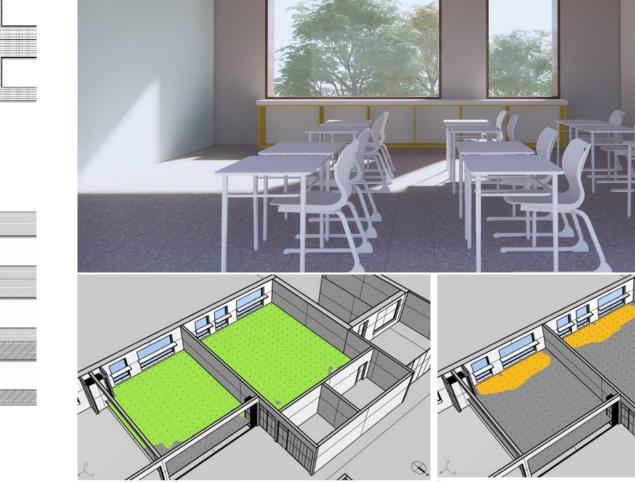
Glazing Area/Classroom: 128 SF

Glazing Area/Classroom: 108 SF

Wall Area/Classroom: 350

WWR: 30.8 %

WWR: 36.6 %



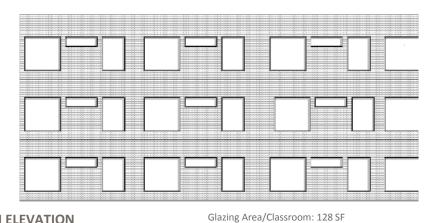
Design Option 1 - South Classrooms: 88.1% SDA Scenario 3 – Ext. Sunshades 24" deep and interior light shelf 18" deep Design Option 1 - South Classrooms: 13.9% ASE

OVERALL WWR: 25%

SOUTH ELEVATION

CLASSROOM OPTION 1

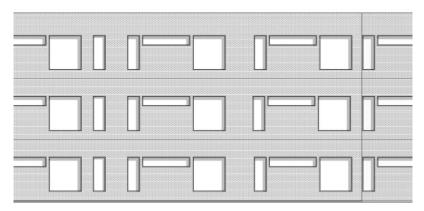




NORTH ELEVATION



WWR: 36.6 %



SOUTH ELEVATION

Glazing Area/Classroom: 108 SF Wall Area/Classroom: 350

Design Option 2 - South Classrooms: 58.1% SDA

Scenario 3 – Ext. Sunshades 24" deep and interior light shelf 18" deep

WWR: 30.8 %



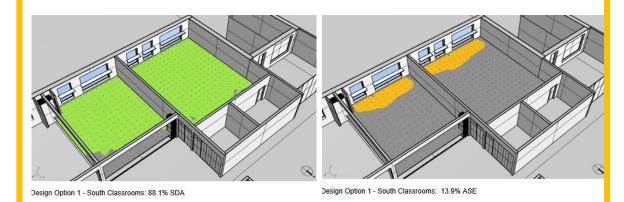
Design Option 2 - South Classrooms: 7.5% ASE

OVERALL WWR: 25%

CLASSROOM OPTION 3







RECOMMENDATION

OPTION 3



Design Option 2 - South Classrooms: 58.1% SDA

Design Option 2 - South Classrooms: 7.5% ASE

WINDOW OPTION COMPARISON





OPTION 1 MIST

OPTION 2 SOLID

OPTION 3 GRAIN

OPTION 4 TEXTURE



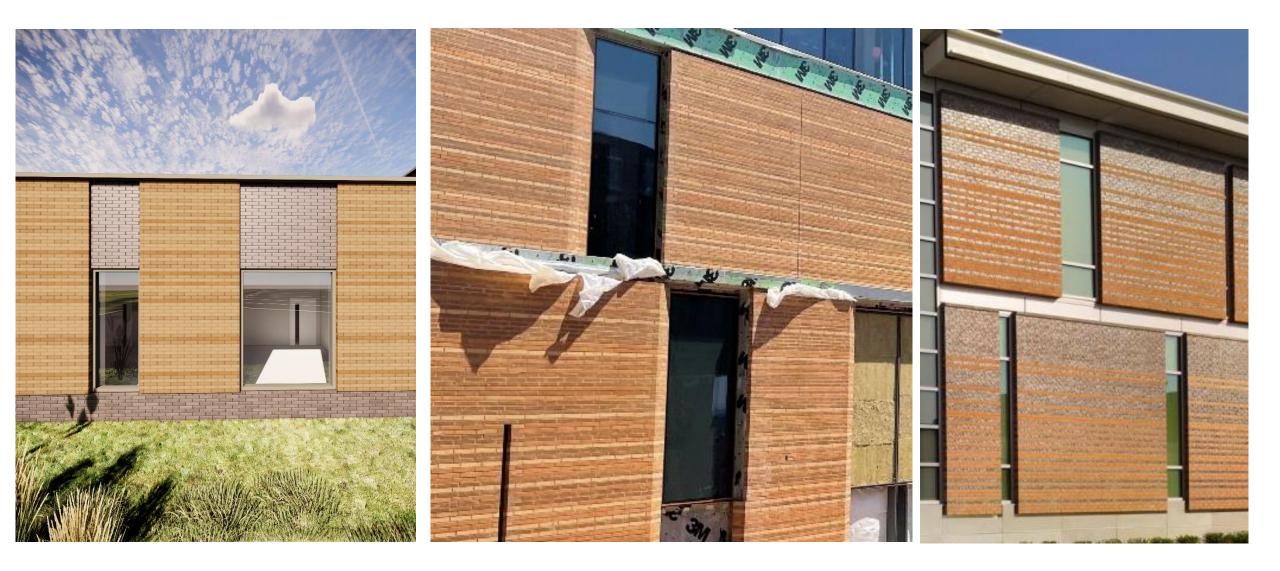


OPTION 1 MIST

















OPTION 4 TEXTURE





OPTION 1 MIST

OPTION 2 SOLID

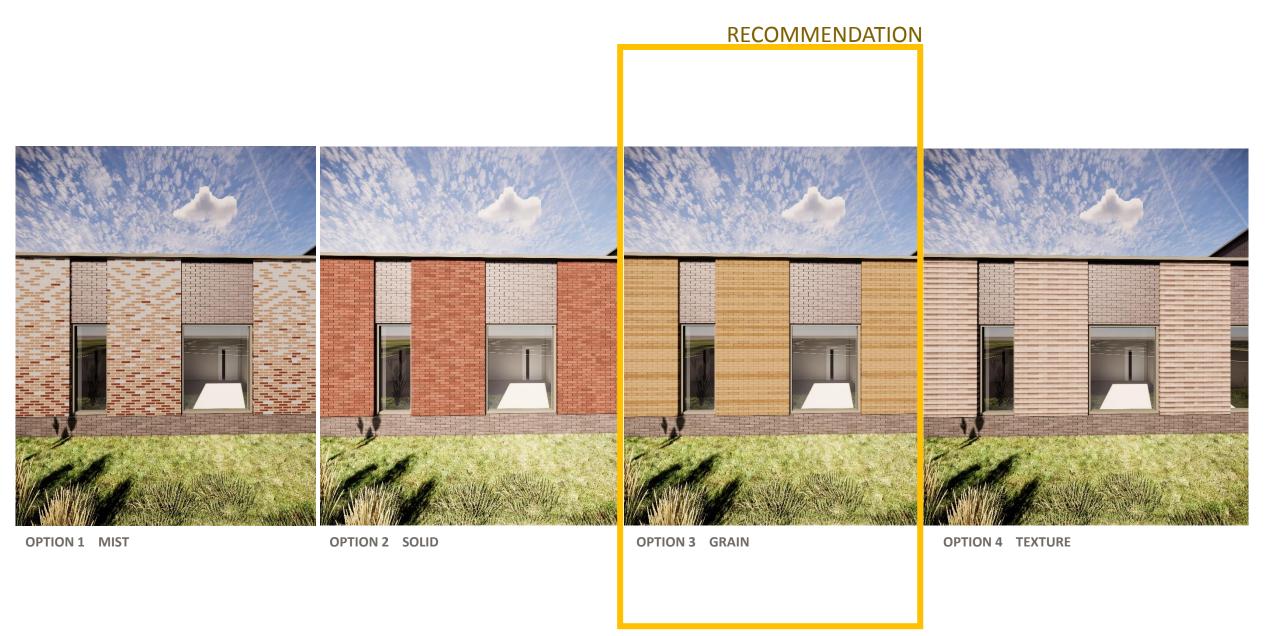




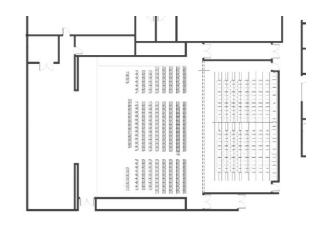
OPTION 4 TEXTURE

MATERIAL OPTION COMPARISON

OPTION 3 GRAIN



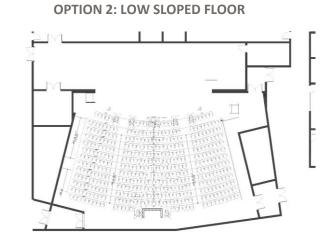
MATERIAL OPTION COMPARISON

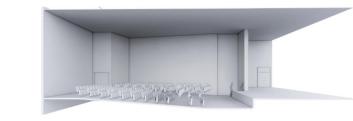


OPTION 1: HYBRID



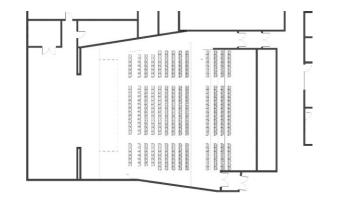
Furthest Seat: 82' Feet from Proscenium Seating House: 74'x84' Stage Width: 38'





Furthest Seat: 55' Feet from Proscenium Seating House: 65'x94' Stage Width: 45'

OPTION 3: SLOPED & STEPPED SEATING

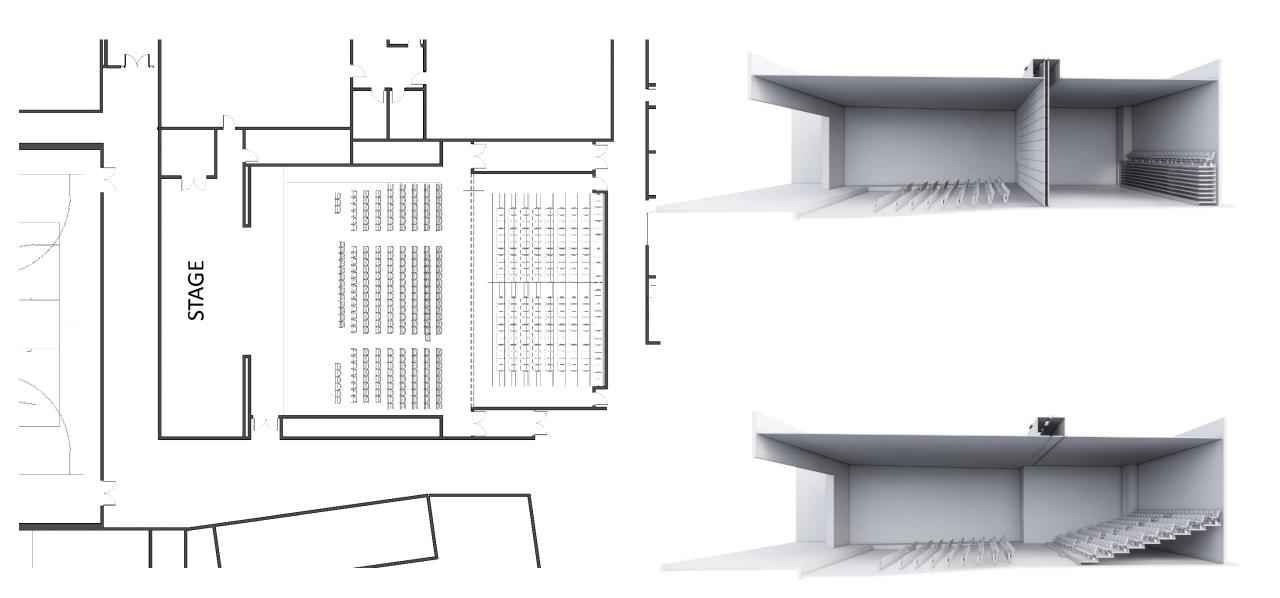




Furthest Seat: 82' Feet from Proscenium Seating House: 74'x84' Stage Width: 38'

45

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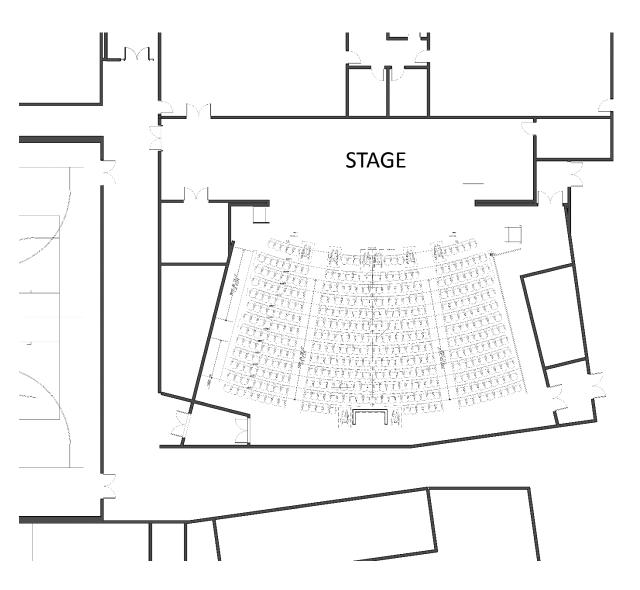


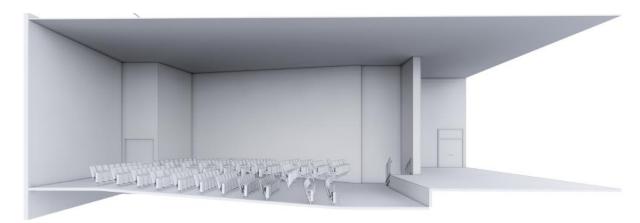


- Acoustics, finishes, and mechanical system to match conventional auditorium
- Multiple activities can operate simultaneously – with potential for separate mechanical control
- Front (fixed seating) can accommodate one full grade

Con's

- Increased distance from furthest seat to stage
- Operable partition and seats will require maintenance
- Perception of unconventional







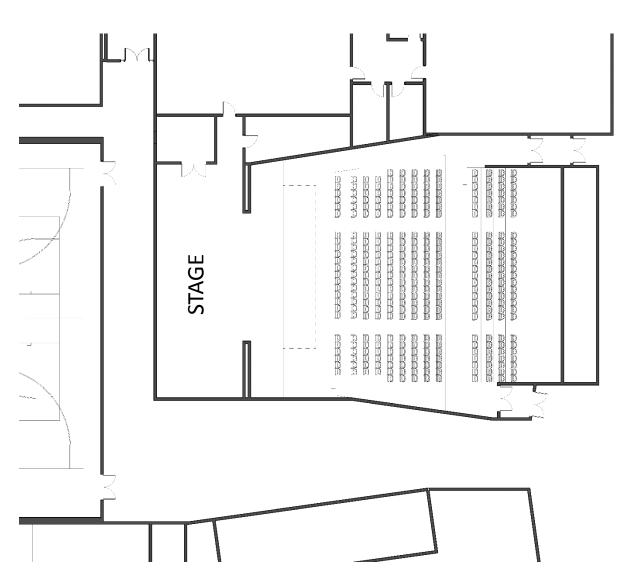


Pro's

- Floor Plan rotation allows for wider seating house
- Shorter sightlines from back row
- Shorter distance walking from back row to stage
- Uniform treatment of space

Con's

• Limits use of space only as a conventional auditorium





OPTION 3 – TIERED SIDE ENTRANCE FLIPPED





Pro's

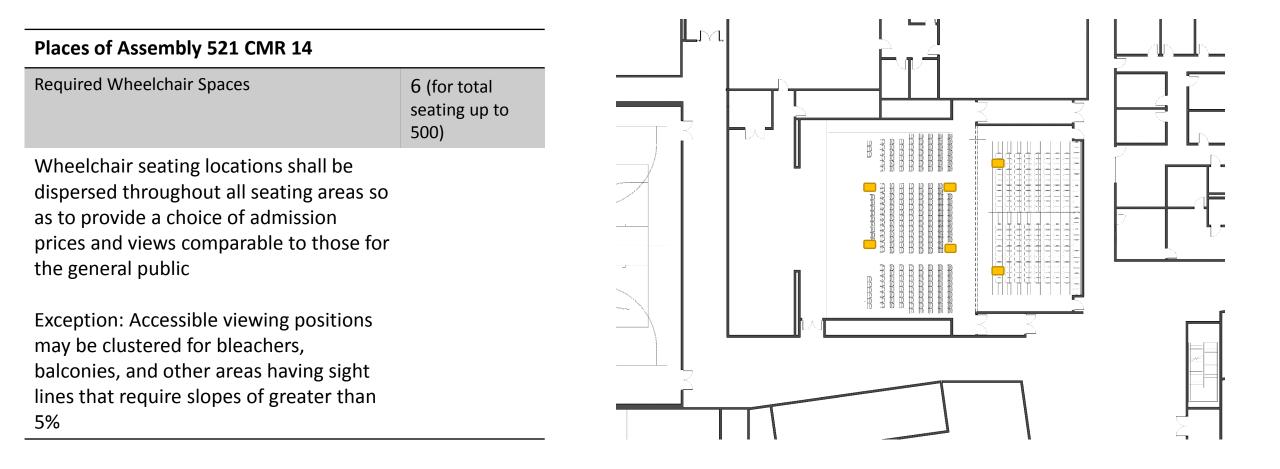
- Common layout found in many schools
- Uniform treatment of space
- Potential to use space below stepped seating
- Stepped seating in rear shortens sightlines to stage from back row

Con's

- Limits use of space only as a conventional auditorium
- Increased distance from furthest seat to stage
- Will require further study of distribution of wheelchair accessible seats

OPTION 3 – **TIERED SIDE ENTRANCE FLIPPED**

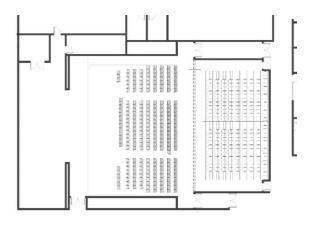


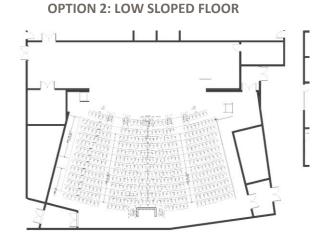


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RECOMMENDATION

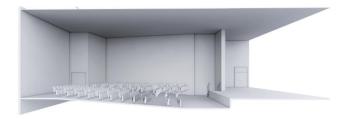
OPTION 1: HYBRID





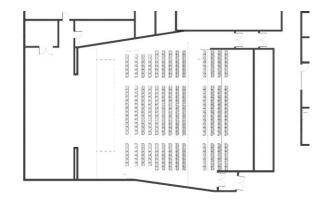


Furthest Seat: 82' Feet from Proscenium Seating House: 74'x84' Stage Width: 38'



Furthest Seat: 55' Feet from Proscenium Seating House: 65'x94' Stage Width: 45'

OPTION 3: SLOPED & STEPPED SEATING





Furthest Seat: 82' Feet from Proscenium Seating House: 74'x84' Stage Width: 38'



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 •
- Storage: Reviewed cafeteria storage, reduced from 400 to 300 nsf •

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
- Reduced number of EV charging stations planned for installation over FS goal to meet EZ code requirements; extent of conduit for EV-ready to be reviewed during VE process

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
- No secondary, additional natural ventilation system planned

Cost Saving Due-Diligence • To Date

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

Currently Known Cost Risks

Market Conditions

Unforeseen site conditions

Septic System design requirements



Upcoming Meetings

Concord Middle School



Meetings

CMSBC – Thursday, September 16th

- Exterior and Interior Design refinements
- Mechanical Systems update

CMSBC – Thursday, October 7th

- SD Pricing Submission Content
- Proposed Value Management List
- Furniture and Technology Scope and Budget
- -----[2.5 weeks Estimating and SD Report Review]------

CMSBC – Friday, November 5th

- Review Reconciled Estimates / Project Cost
- Discuss Value Management (VM) Recommendation
- Vote VM Recommendation

CMSBC – Friday, November 12th

• Vote to approve Schematic Design Scope and Budget

