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**South Shore Regional Vocational  
School District**

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**South Shore Regional Vocational Technical High School (SST)  
South Shore Regional Vocational Technical High School District  
SST School Building Committee**

February 29, 2024

Mr. Mike McGurl  
Director of Capital Planning  
40 Broad Street  
Boston, Massachusetts 02109

Re: SST Feasibility Study – Preferred Schematic Report Submission  
Module 3 – Local Actions and Approval Certification

Dear Mr. McGurl:

The SST School Building Committee (“SBC”) has completed its review of the Feasibility Study – Preferred Schematic Report for the South Shore Regional Vocational Technical High School Project (the “Project”), and on February 22, 2024, the SBC voted to approve and authorize the Designer and the Owner’s Project Manager to submit the Feasibility Study related materials to the MSBA for its consideration. A certified copy of the SBC meeting minutes from November 2, 2023 through February 8, 2024 is attached for record. The certified copy of the February 15, 2024 and February 22, 2024 meeting minutes which include the specific language of the vote and the number of votes in favor, opposed, and abstained will be sent along after their approval at the SBC’s March 2024 meeting.

Since the MSBA’s Board of Directors invited the District to conduct a Feasibility Study on October 26, 2022, the SBC has held 14 meetings regarding the proposed project, in compliance with the state Open Meeting Law.

The following is a summary of SST SBC meetings held to discuss and/or present to the public material related to the Project since the Committee’s inception. Where no action was required or taken, or where discussion is noted, please refer to the attached meeting minutes for additional detail. Notice for each meeting was posted at the SST School Department office and on the SST website.

02/07/2023 12:30pm	SST School Building Committee Meeting - Remote Meeting
Call to Order	No action required/taken.
Owner's Project Manager (OPM) Presentation on MSBA Process, Feasibility Study Budget and Draft Request for Services (RFS) for Designer Services	No action required/taken.
Increase to Feasibility Study Agreement Budget	Motion taken/approved.
Draft Request for Services (RFS) for Designer Services	Motion taken/approved.
Adjourn	No action required/taken.

06/01/2023 3:30pm	SST School Building Committee Meeting - In Person at South Shore Tech
Call to Order	No action required/taken.
Vote to approve meeting minutes	Motion taken/approved.
Vote to approve invoices & commitments	Motion taken/approved.
Designer Selection Process	No action required/taken.
Project Schedule Update	No action required/taken.
Next Meeting	No action required/taken.
Adjourn	No action required/taken.

08/09/2023 6:00pm	SST School Building Committee Meeting - Remote Meeting
Call to Order	No action required/taken.
Vote to approve meeting minutes	Motion taken/approved.
Vote to approve invoices & commitments	Motion taken/approved.
Project Schedule Update	No action required/taken.
Designer Updates	No action required/taken.
Public Comment	No action required/taken.
New Business	No action required/taken.
Adjourn	No action required/taken.

09/07/2023 6:00pm	SST School Building Committee Meeting - In-person Meeting at South Shore Tech
Call to Order	No action required/taken.
Vote to approve meeting minutes	Motion taken/approved.
Vote to approve invoices & commitments	Motion taken/approved.
Project Schedule Update	No action required/taken.
Designer Updates	No action required/taken.
Lessons Learned	No action required/taken.
Public Comment	No action required/taken.
New Business	No action required/taken.
Adjourn	No action required/taken.

09/20/2023 2:00pm	SST School Building Committee Meeting - Remote Meeting
Call to Order	No action required/taken.
Agenda Adjustments	No action required/taken.
Public Comment	No action required/taken.
School Building Initial Design Feedback	No action required/taken.
Other Project Updates	No action required/taken.
Adjourn	No action required/taken.



10/24/2023 7:00pm

SST School Building Committee Meeting -  
Remote Meeting

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Call to Order  
Vote to approve meeting minutes  
Preliminary Design Program Review  
Vote to submit PDP to MSBA  
Next Meeting and Upcoming Community Forums  
Adjourn

No action required/taken.  
Motion taken/approved.  
Motion taken/approved.  
Motion taken/approved.  
No action required/taken.  
No action required/taken.

11/02/2023 6:00pm

SST School Building Committee Meeting -  
In-person Meeting at South Shore Tech

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Call to Order  
Vote to approve meeting minutes  
Vote to approve invoices  
Budget Update  
Schedule Update  
Design Option Review  
Adjourn

No action required/taken.  
Motion taken/approved.  
Motion taken/approved.  
No action required/taken  
No action required/taken  
No action required/taken  
No action required/taken.

11/15/2023 6:00pm

SST School Building Committee Meeting -  
In-person Meeting at South Shore Tech

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Call to Order  
Vote to approve meeting minutes  
Public Comment  
Design Options Discussion Continued  
Review Options Constraints and Conceptual Costs  
Design Options and/or Enrollments  
Adjourn

No action required/taken.  
Motion taken/approved.  
No action required/taken.  
No action required/taken.  
No action required/taken.  
Motion taken/approved.  
No action required/taken.

11/30/2023 5:00pm

SST School Building Committee Meeting -  
In-person Meeting at South Shore Tech

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Call to Order  
Public Comment  
Construction Delivery Method Review  
Site Design Update  
Main Entrance Design  
Building Massing Review  
Adjourn

No action required/taken.  
No action required/taken.  
No action required/taken.  
No action required/taken.  
No action required/taken.  
No action required/taken.  
No action required/taken.

12/14/2023 3:00pm

SST School Building Committee Meeting -  
Remote Meeting

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Call to Order  
Public Comment  
Vote to approve meeting minutes  
Vote to approve contract amendment  
Vote to approve invoices  
Budget Update  
Schedule Overview  
Vote on Construction Delivery Method  
Design Option Review  
Adjourn

No action required/taken.  
No action required/taken.  
Motion taken/approved.  
Motion taken/approved.  
Motion taken/approved.  
No action required/taken.  
No action required/taken.  
Motion taken/approved.  
No action required/taken.  
No action required/taken.

01/17/2024 6:00pm	SST School Building Committee Meeting - In-person Meeting at South Shore Tech
Call to Order	No action required/taken.
Vote to approve meeting minutes	Motion taken/approved.
Vote to approve invoices	Motion taken/approved.
Budget Update	No action required/taken.
Cost Estimate and Evaluation Matrix	No action required/taken.
Adjourn	No action required/taken.
01/25/2024 5:00pm	SST School Building Committee Meeting - In-person Meeting at South Shore Tech
Call to Order	No action required/taken.
Public Comment	No action required/taken.
Vote to approve meeting minutes	Motion taken/approved.
Project Updates	No action required/taken.
Cost Estimate Review	No action required/taken.
Design Matrix Review	No action required/taken.
Adjourn	No action required/taken.
02/08/2024 6:00pm	SST School Building Committee Meeting - In-person Meeting at South Shore Tech
Call to Order	No action required/taken.
Public Comment	No action required/taken.
OPM Updates	No action required/taken.
Design and Enrollment Options Discussion	No action required/taken.
Estimated Tax Impact Review	No action required/taken.
Next Meeting	No action required/taken.
Adjourn	No action required/taken.
02/15/2024 6:00pm	SST School Building Committee Meeting - In-person Meeting at South Shore Tech
Call to Order	No action required/taken.
Public Comment	No action required/taken.
OPM Updates	No action required/taken.
Design and Enrollment Options Review/Vote	Motion taken/approved.
Next Meeting	No action required/taken.
Adjourn	No action required/taken.
02/22/2024 6:00pm	SST School Building Committee Meeting - In-person Meeting at South Shore Tech
Call to Order	No action required/taken.
Vote to approve meeting minutes	Motion taken/approved.
Vote to approve invoices	Motion taken/approved.
OPM Updates	No action required/taken
Vote on Preferred Enrollment	Motion taken/approved.
Vote to submit PSR to MSBA	Motion taken/approved.
Adjourn	No action required/taken.

In addition to the SBC meetings listed above, the District held five community meetings, at which the Project was discussed. Formal meeting notes were not kept for these community meetings.

10/05/2023 4:00pm

South Shore Tech Community Forum #1  
Remote Meeting

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Team Introductions  
The MSBA Process  
Project Timeline / Project Milestones  
Design Team Updates:  
- Existing Building and Site Conditions Analysis  
- Educational Visioning  
- Site Options  
More Community Feedback Opportunities  
Questions & Answers

11/09/2023 6:00pm

South Shore Tech Community Forum #2  
Marshfield Town Hall w/ Recording

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Team Introductions  
The MSBA Process  
Project Timeline / Project Milestones  
More Community Feedback Opportunities  
Questions & Answers

12/05/2023 7:00pm

South Shore Tech Community Forum #3  
Rockland Senior Center

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Team Introductions  
The MSBA Process  
Project Timeline / Project Milestones  
More Community Feedback Opportunities  
Questions & Answers

12/14/2023 7:00pm

South Shore Tech Community Forum #4  
Whitman Town Hall w/ Recording

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Team Introductions  
The MSBA Process  
Project Timeline / Project Milestones  
More Community Feedback Opportunities  
Questions & Answers

01/25/2023 7:00pm

South Shore Tech Community Forum #5  
Abington Town Hall w/ Recording

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Team Introductions  
The MSBA Process  
Project Timeline / Project Milestones  
More Community Feedback Opportunities  
Questions & Answers

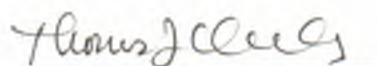
Agendas, meeting minutes, and presentation materials for each of the above listed meetings are available for public viewing electronically via the following links:

For SBC information: <https://southshoretechproject.com/>  
For School Committee Information: <https://southshore.tech/school-committee/>

To the best of my knowledge and belief, each of the meetings listed above complied with the requirements of the Open Meeting Law, M.G.L. c. 30A, §§ 18-25 and 940 CMR 29 *et seq.*

If you have any questions or require any additional information, please contact Jen Carlson via e-mail at [jcarlson@leftfieldpm.com](mailto:jcarlson@leftfieldpm.com).

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.



**By: Dr. Thomas Hickey**

**Title: Chief Executive Officer**

**Date:** 2/29/24

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.



**By: Dr. Thomas Hickey**

**Title: Superintendent of Schools**

**Date:** 2/29/24

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.



**By: Robert Mahoney**

**Title: Chair of the School Committee**

**Date:** 3/1/24



## SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 11/2/2023

A meeting of the South Shore Regional Vocational School Building Committee was held on November 2, 2023 at the South Shore Vocational Technical High School Building, 476 Webster St, Hanover, Massachusetts.

The District School Building Committee members present were Chairman Heywood, Messrs. Mahoney (zoom), Petruzzelli, Salvucci, Cooney, Manning (zoom), F Molla, Hickey, Coughlin, Boyle, and Mello.

Also in attendance were Jen Carlson: Left Field (zoom), Judd Christopher: DRA, Carl Franceschi (DRA), Sarah Carda (DRA), Lynn Singleton (Leftfield), and John Galvin.

**The meeting of the School Building Committee was called to order by Chairman Heywood at 6:00pm.**

Motion	Second	Vote
<b>All votes will be roll call votes based on some members joining via Zoom</b>		

Bob Mahoney opened the meeting noting the resignation of Bob Molla from Norwell. Bob's insight will be missed.

Jen Carlson reviewed the evening's agenda. The preliminary design plan was submitted on October 25th. Feedback is expected within 4-6 weeks. The next milestone is January 31st. A decision of the single option would need to be made by January 17th in order to meet the deadline.

A motion to approve \$368,610.42 in invoices	<b><i>Mr. Salvucci</i></b>	<b><i>Mr. Cooney</i></b>	<b><i>Unanimous</i></b>
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Carl Franceschi from DRA showed the committee a PowerPoint presentation presenting 25 options: Five Building Options (three new building options and two renovation options) based on Five Enrollment figures (645/750/805/900/975). Carl highlighted the parking spaces associated with each design.

Jen Carlson from Leftfield reviewed the project costs. MSBA's actual participation is 30-31%. The feasibility participation is 55.63%.

A motion to eliminate all design AR-2 options due to educational deficiencies.	<b><i>Mr. Coughlin</i></b>	<b><i>Mr. Cooney</i></b>	<b><i>Unanimous 12-0</i></b>
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A motion to eliminate 645 enrollment and 975 enrollment designs AR-1.	<b><i>Mr. Mahoney</i></b>	<b><i>Mr. Salvucci</i></b>	<b><i>Unanimous 12-0</i></b>
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A motion to eliminate all 750 enrollment options.	<b><i>Mr. Molla</i></b>	<b><i>Mr. Salvucci</i></b>	<b><i>Unanimous 12-0</i></b>
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A motion to eliminate all 805 enrollment options.	<b><i>Mr. Petruzzelli</i></b>	<b><i>Mr. Coughlin</i></b>	<b><i>Approved 11-0-1 (Mello on zoom)</i></b>
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Tom Hickey mentioned the next School Building Committee meeting will be held on November 15th to discuss the pros/cons of the remaining designs.

A motion to adjourn at 8:18pm.	<b><i>Mr. Salvucci</i></b>	<b><i>Mr. Petruzzelli</i></b>	<b><i>Unanimous 12-0</i></b>
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Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

## SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 11/15/2023

A meeting of the South Shore Regional Vocational School Building Committee was held on November 15, 2023 at the South Shore Vocational Technical High School Building, 476 Webster St, Hanover, Massachusetts.

The District School Building Committee members present were Chairman Heywood, Messrs. Mahoney, Petruzzelli, Salvucci, Cooney, Manning, Molla, Hickey, Coughlin, Boyle, Mello, and Ms. Baldner.

Also in attendance were Jen Carlson: Left Field (zoom), Carl Franceschi (DRA)

**The meeting of the School Building Committee was called to order by Chairman Heywood at 6:39pm.**

	Motion	Second	Vote
A motion to approve the minutes of the October 24, 2023 meeting.	<i>Mr. Manning</i>	<i>Mr. Molla</i>	<i>Unanimous</i>
A motion to approve the minutes of the November 2, 2023 meeting.	<i>Mr. Manning</i>	<i>Mr. Molla</i>	<i>Unanimous</i>

A discussion was held on how Marshfield would be paying for their share of the building project. They would pay a floating amount based on enrollment in years 1-4, and would be paying a fixed amount from year 5 moving forward.

Carl Franceschi from DRA showed the committee a PowerPoint presentation with a rough breakdown of cost per town.

Jen Carlson from Leftfield reviewed the project costs. MSBA's effective participation is expected to be 30-31% for the entire project. The MSBA's participation during feasibility is 55.63%.

A motion to add back all 805 enrollment options back into the discussion.	<i>Mr. Mahoney</i>	<i>Mr. Salvucci</i>	<i>Unanimous 12-0</i>
A motion to eliminate all 975 enrollment options.	<i>Mr. Hickey</i>	<i>Mr. Molla</i>	<i>Unanimous 12-0</i>
A motion to eliminate all NC-3 ( Wings design) options.	<i>Mr. Mello</i>	<i>Ms. Baldner</i>	<i>Unanimous 12-0</i>
A motion to eliminate all NC-1 ( Courtyard design) options.	<i>Mr. Boyle</i>	<i>Mr. Mello</i>	<i>Unanimous 12-0</i>
A motion to eliminate all NC-2.0 (Linear with far left entrance) options.	<i>Mr. Mello</i>	<i>Mr. Hickey</i>	<i>FAILED - 11-0-1</i>

At this time six options remain: Enrollment 805: AR-1, NC-2, NC-2.1, Enrollment 900: AR-1, NC-2, NC-2.1.

A motion to adjourn at 8:45pm.	<i>Mr. Salvucci</i>	<i>Mr. Petruzzelli</i>	<i>Unanimous 12-0</i>
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Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

## SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 11/30/2023

A meeting of the South Shore Regional Vocational School Building Committee was held on November 30, 2023 at the South Shore Vocational Technical High School Building, 476 Webster St, Hanover, Massachusetts.

The District School Building Committee members present were Chairman Heywood, Messrs. Mahoney, Petruzzelli, Salvucci, Cooney, Hickey, Coughlin, Boyle, Mello, and Dustin Reardon.

Also in attendance were Jen Carlson: Left Field (zoom), Carl Franceschi (DRA), Judd Christopher (DRA), Sara Corda, Susan Spratt, David Warner, Lynn Stapleton, Tom Mosley, and John Galvin.

**The meeting of the School Committee was called to order by Chairman Mahoney at 5:03pm.**

Motion	Second	Vote
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Chairman Mahoney introduced Dustin Reardon, our new representative from the Town of Norwell. Dustin is a 2006 graduate of SST.

Dustin thanked Bob Molla for all of his dedicated service to the school committee.

A motion to appoint Dustin Reardon to the South Shore Vocational School Building Committee.

<i>Mr. Salvucci</i>	<i>Mr. Cooney</i>	<i>Unanimous</i>
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A motion to adjourn at 5:10pm

<i>Mr. Salvucci</i>	<i>Mr. Heywood</i>	<i>Unanimous</i>
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**The meeting of the School Building Committee was called to order by Chairman Heywood at 6:39pm.**

Motion	Second	Vote
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Jen Carlson gives a short introduction and hands off the meeting to Carl Franceschi.

Carl Franceschi from DRA showed the committee a PowerPoint presentation with a rough breakdown of cost per town. He introduces David Warner, his landscape architect, who discusses landscape issues.

A motion to have one unified entrance on both new construction designs.

<i>Mr. Cooney</i>	<i>Mr. Mahoney</i>	<i>Unanimous</i>
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Jen Carlson from Leftfield reviewed two options available to the committee: Design-Bid-Build (DBB)(MGL Chapter 149) and CM at Risk (CMR)(MGL Chapter 149A). One of these option needs to be selected by mid-January.

A motion to adjourn at 7:15pm.

<i>Mr. Salvucci</i>	<i>Mr. Mahoney</i>	<i>Unanimous</i>
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Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer



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GARRETT A. D. GEE  
THOMAS P. DELMAR

MIRIAM K. FREEDMAN  
OF COUNSEL

## CERTIFICATE OF AUTHORITY TO USE CM AT-RISK DELIVERY METHOD

I, Colby C. Brunt of Stoneman, Chandler and Miller LLP, legal counsel for the South Shore Regional Vocational Technical High School District, do hereby certify to the Office of Inspector General of the Commonwealth of Massachusetts, in accordance with M.G.L. c.149A, § 4(a)(1) regarding using construction management at risk services for the following project ("Project") as follows:

- 1) That South Shore Regional Vocational Technical High School District is a public agency as defined in M.G.L. c.149A, § 44A(1), is duly organized and existing under the laws of the Commonwealth of Massachusetts, and has received the necessary authority and power from the South Shore Regional Vocational Technical High School Building Committee by a duly recorded vote of said Committee taken on December 14, 2023, and passed by a vote of twelve in favor, two absent and no abstentions, to enter into a contract with a construction management at risk firm and to perform all its obligations in connection with the project.
- 2) That the public vote of the governing body, attached hereto, was duly adopted and is currently in effect.

Signed under the pains and penalties of perjury this 17<sup>th</sup> day of January 2024.



Colby C. Brunt

Counsel for South Shore Regional Vocational Technical High School District

**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT  
476 Webster Street, Hanover, MA 02339**

**SOUTH SHORE REGIONAL VOCATIONAL  
SCHOOL BUILDING COMMITTEE MEETING**

**Thursday, December 14, 2023 – 3:00PM  
(Remote)**

**MINUTES**

Members present included Jack Manning, Tom Petruzzelli, Bob Mahoney, Dan Salvucci, Frank Molla, George Cooney, Dustin Reardon, Tom Hickey, Sandy Baldner, Keith Boyle, Jim Coughlin, and Bob Mello.

Absent were Bob Heywood and Jim Harding.

Also present were LeftField representatives Jen Carlson, Jim Rogers, and Lynn Stapleton; Drummey Rosane Anderson representative Carl Franceschi; and landscape architects Dave Warner and Tom Moseley.

Meeting was called to order by School Committee Chairman Bob Mahoney (in SBC Chairman Bob Heywood's absence) at 3:00PM.

There was no public comment.

Motion by Dan Salvucci, seconded by Jack Manning to approve minutes from the November 15, 2023 School Building Committee meeting. Minutes from the November 30, 2023 minutes were not available.

Roll Call Vote:

Yea: Tom Petruzzelli, George Cooney, Frank Molla, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, Jim Coughlin and Tom Hickey.

Nay: None

Vote: Unanimous

Project Manager Jen Carlson of LeftField led the discussion for contract amendment #2 and invoices. The contract amendment is for cost estimating services through AM Fogarty.

Motion was made by Bob Mahoney, seconded by Dustin Reardon, to approve Contract Amendment #2.

Roll Call Vote:

Yea: Tom Petruzzelli, George Cooney, Frank Molla, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, Jim Coughlin and Tom Hickey.

Nay: None

Vote: Unanimous

Jen Carlson went over approval for invoices for work by DRA and LeftField.

Motion was made by Jack Manning, seconded by Tom Petruzzelli, to approve the invoices as presented by LeftField.

Bob Mahoney asked for clarification about whether these amounts are in line with the fee schedule previously provided and Jen confirmed that they are.

Roll Call Vote:

Yea: Tom Petruzzelli, George Cooney, Frank Molla, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, Jim Coughlin and Tom Hickey.

Nay: None

Vote: Unanimous

Jen Carlson provided a budget update and stated that budget amounts are as expected in this phase.

Jen also provided a schedule overview and mentioned that the Preliminary Design Program (PDP) has been submitted to MSBA and responses should be received in January. She also spoke about the timeline for submissions for the Preferred Schematic Report (PSR) and Schematic Design (SD). Tom Hickey commented that the town clerks have indicated that January 25, 2025 is a possible date for a special election.

Jen provided a review of the Construction Delivery Method and discussed the pros and cons of both Design-Bid-Build (DBB) and Construction Manager at Risk (CM-R). She also discussed the application timeline and process for CM-R procurement which requires the approval of the Inspector General. Bob Mahoney asked if we go with the CM-R method, would it be possible to get input from them before the pre-construction bid process. Lynn Stapleton responded that we could enter into a three-month contract prior to approval of the CM-R.

Motion was made by Bob Mahoney, seconded by Tom Petruzzelli, to approve the procurement of a Construction Manager at Risk.

Bob Mahoney asked about saving money if the project is under budget, and Jim Rogers explained that the CM-R provides cost certainty and accountability regarding amounts submitted to MSBA.

Dan Salvucci asked about the athletic fields, and Tom Hickey responded that, regarding fields, there will be no elimination of athletic programs, but we will be using other fields during construction.

Roll Call Vote:

Yea: Tom Petruzzelli, George Cooney, Frank Molla, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, Jim Coughlin and Tom Hickey.

Nay: None

Vote: Unanimous

Jen Carlson recognized Carl Franchesci of DRA to provide a review of design options, updated site design options and fields and site layout.

Carl discussed five building design options and site development requirements for each option. Landscape architects Dave Warner and Tom Moseley discussed site configuration. There was discussion about entrance and field locations, compromises regarding size of some of the fields,

stands, field lights, the importance of the track to the school community, public facilities and concession stand, and general parking.

Carl summed up the consensus that Option 1 was the most appealing, with information on some traffic adjustments, keeping the track, and adjusting the size of the baseball field to be provided to the cost estimators.

Motion to present Option 1 to the cost estimators was made by Bob Mello, seconded by Tom Petruzzelli.

Roll Call Vote:

Yea: Tom Petruzzelli, George Cooney, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, and Tom Hickey.

Nay: None

No response due to technical difficulties: Jim Coughlin and Frank Molla.

Vote: Unanimous for all available.

Tom Hickey confirmed that the mirrored Version 2.0 with Electrical on the third floor, gym and lockers on left is the version going to the cost estimators.

Motion was made by Dan Salvucci, seconded by Bob Mello to approve Version 2.0.

Roll Call Vote:

Yea: Tom Petruzzelli, George Cooney, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, and Tom Hickey.

Nay: None

No response due to technical difficulties: Jim Coughlin and Frank Molla.

Vote: Unanimous for all available.

Motion to adjourn was made by Dan Salvucci, seconded by Bob Mello.

Roll Call Vote:

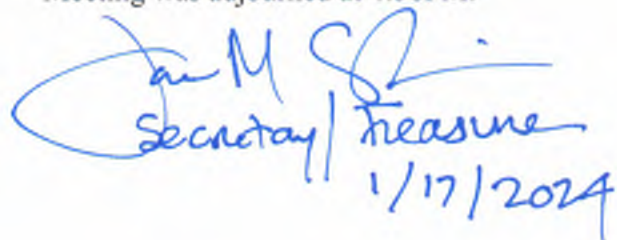
Yea: Tom Petruzzelli, George Cooney, Dustin Reardon, Bob Mahoney, Jack Manning, Dan Salvucci, Sandy Baldner, Bob Mello, Keith Boyle, and Tom Hickey.

Nay: None

No response due to technical difficulties: Jim Coughlin and Frank Molla.

Vote: Unanimous for all available.

Meeting was adjourned at 4:56PM.

  
Secretary/Treasurer  
1/17/2024

## JOINT MEETING of the SOUTH SHORE REGIONAL SCHOOL DISTRICT COMMITTEE and the SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 1/17/2024

A joint meeting of the South Shore Regional School District Committee and the South Shore Regional Vocational School Building Committee was held on Wednesday January 17, 2024 at the South Shore Vocational Technical High School Building, 476 Webster St, Hanover, Massachusetts.

The District School Committee members present were Chairman Heywood, Messrs. Petruzzelli, Salvucci, Cooney, Manning, Molla, Coughlin, Hickey, Mello and Ms. Baldner.

Also in attendance were Carl Franceschi (DRA), Judd Christopher (DRA), Jen Carlson (Leftfield), Sarah Corda (Leftfield).

**The meeting of the School Building Committee was called to order by Chairman Heywood at 6:34pm.**

A motion to approve the minutes of the School Building Committee meeting on December 14, 2023.

Motion	Second	Vote
<i>Mr. Petruzzelli</i>	<i>Mr. Manning</i>	<i>Unanimous for those in attendance</i>

Jen Carlson from Left Field reviewed budget, PSR Costs, and that the decision for the schematic design has been pushed to the end of February. Jen reviewed the estimated cost of the nine design options:

Enrollment:	805 Students	900 Students
NC 2.0	266-287m	278-299m
NC 2.1	263-303m	281-308m
AR 1.0	256-267m	271-282m

Carl Franceschi from DRA presented a power point presentation highlighting the 3 new building options.

A motion to adjourn the School Building Committee portion of the meeting at 7:59pm

*Mr. Salvucci      Mr. Petruzzelli      Unanimous*

Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

# SOUTH SHORE REGIONAL SCHOOL DISTRICT COMMITTEE 1/17/2024

A meeting of the South Shore Regional School District Committee was held on Wednesday January 17, 2024 at the South Shore Vocational District Offices, 436 Webster St, Hanover, Massachusetts.

The District School Committee members present were Vice Chairman Petruzzelli, Messrs. Salvucci, Cooney, Manning, Reardon, Molla (zoom), and Heywood. Absent Chairman Mahoney.

Also in attendance were Mr. Thomas J. Hickey, Superintendent of Schools; Mr. James Coughlin, District Treasurer; Principal Sandy Baldner, Crystal Paluzzi, Matt Fallano, Student Representative Lily McGann, Jim Ferris, Josh Craig, and Stella Glykis and family.

	Motion	Second	Vote
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The meeting of the School Committee was called to order by Vice Chairman Petruzzelli at 6:00pm.

The meeting opened with a moment of silence for recently deceased former School Committee member Robert Molla from Norwell.

Sandy Baldner introduced Stella Glykis, a senior in our Culinary Arts program from Hanover. Stella is an outstanding student and leader, and works locally at the Scarlet Oak Tavern.

Sandy Baldner introduced Jim Ferris and Josh Craig from the Metal Fabrication/Welding program. Absent was Cole Hoadley. Sandy mentioned the programs accomplishments. Jim mentioned that 12 students were currently participating in the cooperative education program.

Lily McGann mentioned Skills will be promoting a Comedy Show for March 9th at the Venus III in Hanson. They will also be participating in an MRE challenge with two teams competing on January 25th. The Senior Sail conference will be held at Gillette Stadium on February 8th. National Honor Society will be selling cookbooks for \$20 over the next few weeks. The Graphics program launch the school store before Thanksgiving and current sales exceed \$9,000. Mrs. Rutkowski is scheduled to visit local town halls, and local non-profits promoting the services of the Graphics program.

Jim Coughlin presented the monthly Treasurer's Report for the month of December 2023.

Jim requested an additional moment of silence for recently deceased Edna Robie and Sylvia Hufnagal-Coppola who both worked in the business office.

A motion to approve the monthly Treasurer's Report.

**Mr. Salvucci**

**Mr. Cooney**

**Unanimous**

Superintendent Hickey updated the committee on the FY25 Budget which will be reviewed during a public hearing at our January 25th meeting.

## SOUTH SHORE REGIONAL SCHOOL DISTRICT COMMITTEE 1/17/2024

**Motion**

**Second**

**Vote**

Superintendent Hickey updated the committee recent sub-committee meetings including the Policy Committee, Regional Planning, and Negotiations. The Regional Planning committee is discussing changing the methods to which member town's allocation for debt is calculated.

Principal Baldner mentioned that the School Improvement plan is being reviews, NEASC will be reviewed in May, MCAS testing will be held this spring and the South Shore Leadership Group hosted the South Shore Chamber of Commerce here at the school. Mr. Baldner is working the Parent's Association on a mentoring program where Juniors will mentor Freshmen.

A motion to approve the revised Education Plan

***Mr. Manning***

***Mr. Heywood***

***Unanimous***

A motion to adjourn at 6:34pm

***Mr. Salvucci***

***Mr. Heywood***

***Unanimous***

Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

# JOINT MEETING of the SOUTH SHORE REGIONAL SCHOOL DISTRICT COMMITTEE and the SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 1/25/2024

A joint meeting of the South Shore Regional School District Committee and the South Shore Regional Vocational School Building Committee was held on Thursday January 25, 2024 at the South Shore Vocational Technical High School Building, 476 Webster St, Hanover, Massachusetts.

The District School Committee members present were Chairman Heywood, Messrs. Petruzzelli, Salvucci, Cooney, Manning, Molla, Coughlin, Hickey, Boyle (zoom) and Ms. Baldner.

Also in attendance were Crystal Paluzzi, Carl Franceschi (DRA), Judd Christopher (DRA)(zoom), and Jen Carlson (Leftfield).

**The meeting of the School Building Committee was called to order by Chairman Heywood at 5:14pm.**

A motion to approve the minutes of the School Building Committee meeting on November 30, 2023.

Motion	Second	Vote
<i>Mr. Mahoney</i>	<i>Mr. Cooney</i>	<i>Unanimous for those in attendance</i>

Jen Carlson from Left Field reviewed the estimated cost of the nine design options:

		AR 1 805 Students	AR 1 900 Students	NC 2.0 805 Students	NC 2.0 900 Students	NC 2.1 805 Students	NC 2.1 900 Students
Est Project costs		264,000,000	280,000,000	274,000,000	283,000,000	282,000,000	292,000,000
Est MSBA Share		111,000,000	119,000,000	100,000,000	107,000,000	101,000,000	109,000,000
Est District Share		153,000,000	161,000,000	174,000,000	176,000,000	181,000,000	183,000,000
Abington	16.70%	25,551,000	26,887,000	29,058,000	29,392,000	30,227,000	30,561,000
Cohasset	1.49%	2,279,700	2,398,900	2,592,600	2,622,400	2,696,900	2,726,700
Hanover	11.06%	16,921,800	17,806,600	19,244,400	19,465,600	20,018,600	20,239,800
Hanson	13.03%	19,935,900	20,978,300	22,672,200	22,932,800	23,584,300	23,844,900
Norwell	4.10%	6,273,000	6,601,000	7,134,000	7,216,000	7,421,000	7,503,000
Rockland	22.77%	34,838,100	36,659,700	39,619,800	40,075,200	41,213,700	41,669,100
Scituate	6.60%	10,098,000	10,626,000	11,484,000	11,616,000	11,946,000	12,078,000
Whitman	24.25%	37,102,500	39,042,500	42,195,000	42,680,000	43,892,500	44,377,500
	100.00%						

Carl Franceschi from DRA presented a power point presentation highlighting the 3 new building options.

A motion to adjourn the School Building Committee portion of the meeting at 5:47pm

*Mr. Salvucci      Mr. Mahoney      Unanimous*

Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer



# JOINT MEETING of the SOUTH SHORE REGIONAL SCHOOL DISTRICT COMMITTEE and the SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 1/25/2024

A meeting of the South Shore Regional School District Committee was held on Thursday January 25, 2024 at the South Shore Vocational District Offices, 436 Webster St, Hanover, Massachusetts.

The District School Committee members present were Chairman Mahoney, Vice Chairman Petruzzelli, Messrs. Salvucci, Cooney, Manning, Reardon, Molla, and Heywood.

Also in attendance were Mr. Thomas J. Hickey, Superintendent of Schools; Mr. James Coughlin, District Treasurer; Principal Sandy Baldner, Crystal Paluzzi, Keith Boyle (zoom), Judd Christopher (zoom), Carl Franceschi and Jen Carlson.

	Motion	Second	Vote
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The meeting of the School Committee was called to order by Chairman Mahoney at 5:00pm.

A motion to open the public hearing on the FY25 Budget.	<b><i>Mr. Manning</i></b>	<b><i>Mr. Salvucci</i></b>	<b><i>Unanimous</i></b>
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Superintendent Hickey updated the committee on the FY25 Budget which is \$15,923,068, and explained the Commonwealth's Chapter 70 funds which include a modest increase.

A motion to close the public hearing of the FY25 Budget.	<b><i>Mr. Salvucci</i></b>	<b><i>Mr. Heywood</i></b>	<b><i>Unanimous</i></b>
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Superintendent Hickey updated the committee that the Regional Planning Committee met and discussed apportioning debt based on a four year rolling average. There is a meeting scheduled to meet with Pembroke next week.

A motion to approve the entering into a Bus Lease for up to 13 new propane buses.	<b><i>Mr. Manning</i></b>	<b><i>Mr. Cooney</i></b>	<b><i>Unanimous</i></b>
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A motion to adjourn at 5:14pm	<b><i>Mr. Salvucci</i></b>	<b><i>Mr. Heywood</i></b>	<b><i>Unanimous</i></b>
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Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

**JOINT MEETING of the SOUTH SHORE REGIONAL SCHOOL DISTRICT  
COMMITTEE and the SOUTH SHORE REGIONAL VOCATIONAL SCHOOL  
BUILDING COMMITTEE 2/8/2024**

A joint meeting of the South Shore Regional School District Committee and the South Shore Regional Vocational School Building Committee was held on Thursday February 8, 2024 at the South Shore Vocational Technical High School Office Building, 436 Webster St, Hanover, Massachusetts.

The District School Committee members present were Chairman Heywood, Messrs. Petruzzelli, Salvucci, Cooney, Manning, Molla (zoom), Coughlin, Hickey, Mello (zoom), and Ms. Baldner. Also in attendance were Crystal Paluzzi, Carl Franceschi (DRA), Jim Rogers, Sarah Carda, Judd Christopher (DRA)(zoom), and Jen Carlson (Leftfield).

**The meeting of the School Building Committee was called to order by Chairman Heywood at 6:12pm.**

Motion	Second	Vote
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Superintendent Hickey presents a table to current FY24-25 applications which were received by our guidance department, along with a table of our FY24 graduates. The table is presented below:

	Applications for FY24-25	FY24 Graduating Seniors	Variance
Abington	45	27	18
Cohasset	6	1	5
Hanover	29	19	10
Hanson	34	24	10
Marshfield	38	2	36
Norwell	10	4	6
Rockland	82	28	54
Scituate	24	6	18
Whitman	70	43	27
TOTAL	338	154	184

Jen Carlson mentioned that the PSR (Preferred Scematic Design) is due by February 29, 2024

A power point presentation was made by Jen Carlson and Carl Franceschi.

Of the current designs being reviewed, AR 1.0 (renovation) would take 52 months to complete, which NC 2.0 and NC 2.1 would take approximately 30 months to complete.

A motion to adjourn the School Building Committee portion of the meeting at 7:28pm

**Mr. Salvucci      Mr. Mahoney      Unanimous**

Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

# JOINT MEETING of the SOUTH SHORE REGIONAL SCHOOL DISTRICT COMMITTEE and the SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE 2/8/2024

A meeting of the South Shore Regional School District Committee was held on Thursday February 8, 2024 at the South Shore Vocational District Offices, 436 Webster St, Hanover, Massachusetts.

The District School Committee members present were Chairman Mahoney, Vice Chairman Petruzzelli, Messrs. Salvucci, Cooney, Manning, Reardon, Molla (zoom), and Heywood.

Also in attendance were Mr. Thomas J. Hickey, Superintendent of Schools; Mr. James Coughlin, District Treasurer; Principal Sandy Baldner, Crystal Paluzzi, Bob Mello (zoom), Judd Christopher (zoom), Carl Franceschi, Sarah Carda, Jim Rogers, and Jen Carlson.

	Motion	Second	Vote
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The meeting of the School Committee was called to order by Chairman Mahoney at 6:00pm.

Superintendent Hickey updated the committee that he met with representatives from Pembroke regarding joining our district. The Regional Planning Committee would like to present the regional agreement changes to local fall town meetings regarding apportioning debt based on a four year rolling average.

A motion to certify the FY24-25 School Budget at \$15,923,068.	<b>Mr. Manning</b>	<b>Mr. Salvucci</b>	<b>Unanimous - Roll Call due to a member on Zoom</b>
A motion to declare surplus a J&L Optical Comparator from the MET department.	<b>Mr. Heywood</b>	<b>Mr. Petruzzelli</b>	<b>Unanimous - Roll Call due to a member on Zoom</b>
A motion to approve an out-of-state field trip for the Carpentry department for a trip to the Rhode Island Convention Center in Providence RI on March 22, 2024.	<b>Mr. Manning</b>	<b>Mr. Cooney</b>	<b>Unanimous - Roll Call due to a member on Zoom</b>
A motion to adjourn at 6:06pm	<b>Mr. Salvucci</b>	<b>Mr. Reardon</b>	<b>Unanimous - Roll Call due to a member on Zoom</b>

Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer

# SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE

2/15/2024

A meeting of the South Shore Regional Vocational School Building Committee was held on Thursday February 15, 2024 at the South Shore Vocational Technical High School Office Building, 436 Webster St, Hanover, Massachusetts.

The District School Committee members present were Chairman Heywood, Messrs. Petruzzelli, Salvucci, Cooney, Manning (zoom) , Molla (zoom), Coughlin, Hickey, Mello (zoom), and Ms. Baldner.

Also in attendance were Crystal Paluzzi, Carl Franceschi DRA (zoom), Jim Rogers (zoom) Leftfield, Sarah Carda (zoom) Leftfield, Judd Christopher DRA (zoom), Lynn Stapleton Leftfield (zoom), Adele Sands Leftfield (zoom), David Saindo Leftfield (zoom), and Jen Carlson Leftfield (zoom).

**The meeting of the School Building Committee was called to order by Chairman Heywood at 6:00pm.**

	Motion	Second	Vote
Jen Carlson reviewed a power point presentation which reflects updated costs of the AR 1.0 project which are significantly higher due to adding modular classrooms during the renovation process.			
A power point presentation was made by Jen Carlson and Carl Franceschi.			
A motion to remove AR 1.0, the Add/Renovation option from our discussions due to project costs.	<i>Mr. Reardon</i>	<i>Mr. Salvucci</i>	<i>9-0-1 (Molla connection issues)</i>
A motion to remove NC 2.1, the center entrance with the gymnasium and auditorium located in the center of the school from our discussions due to project costs which are significantly higher than the NC 2.0 option.	<i>Mr. Reardon</i>	<i>Mr. Mahoney</i>	<i>Unanimous, 10-0</i>
A motion to adjourn the School Building Committee meeting at 6:46pm	<i>Mr. Salvucci</i>	<i>Mr. Cooney</i>	<i>Unanimous</i>

Respectfully submitted:

James M. Coughlin, District Secretary/Treasurer



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SOUTH SHORE TECH HIGH SCHOOL PROJECT – Hanover, MA

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**MEETING OF THE SOUTH SHORE TECH SCHOOL BUILDING COMMITTEE (SBC)**

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Date: Thursday, November 2, 2023

Time: 6:00PM

Location: The Brass Lantern  
476 Webster Street  
Hanover, MA 02339

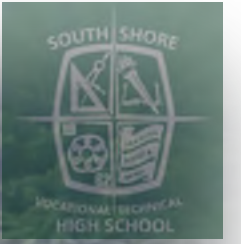
## Agenda

1. Public comment
2. Project Approvals:
  - Vote to Approve Meeting Minutes from October 24, 2023 SBC Meeting
  - Vote to Approve Invoices – LeftField and DRA Architects
3. Budget Update
4. Schedule Update
5. Design Options
  - Review Comparative Conceptual Cost Analysis
  - Review Options Priority Matrix
  - Possible Vote to eliminate a number of design options and/or design enrollments from consideration
6. Adjourn



# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

November 2, 2023



100  
YEARS

DRA

# Agenda



1. Public Comment
2. Project Approvals:
  - Meeting Minutes from October 24, 2023 SBC Meeting
  - Invoices – LeftField and DRA Architects
2. Budget Update
3. Schedule Update
4. Designer Options:
  - Review Comparative Conceptual Cost Analysis
  - Review Options Priority Matrix
  - Possible Vote to eliminate a number of design options and/or design enrollments from consideration
5. Adjourn



# Invoices - TOTAL \$368,610.43



INVOICES						
ProPay Code	Invoice Date	Vendor	Invoice #	Budget Category	Description of Services	Invoice \$
0001-0000	09/30/23	LeftField, LLC	6	OPM – Feasibility Study/ Schematic Design	OPM Feasibility Study Services September 1 – September 30, 2023	\$29,000.00
0001-0000	10/31/23	LeftField, LLC	7	OPM – Feasibility Study/ Schematic Design	OPM Feasibility Study Services October 1 – October 31, 2023	\$29,000.00
0002-0000	09/30/23	DRA	3	A/E - Feasibility Study/ Schematic Design	A/E Feasibility Study Services September 1 – September 30, 2023	\$82,500.00
0002-0000	10/31/23	DRA	4	A/E - Feasibility Study/ Schematic Design	A/E Feasibility Study Services October 1 – October 31, 2023	\$220,000.00
0002-0000	10/31/23	DRA	A1-1	A/E - Feasibility Study/ Schematic Design	Amendment #1 - Preliminary Geotech Study, ESA Phase 1	\$4,288.79
0002-0000	10/31/23	DRA	A2-1	A/E - Feasibility Study/ Schematic Design	Amendment #2 – Hazmat Investigation, Report, Estimate	\$3,821.64
					<b>TOTAL:</b>	<b>\$368,610.43</b>

# Total Project Budget Update



South Shore Regional Vocational Technical High School - Hanover, MA										
Total Project Budget Status Report										
ProPay Code	Description	Total Project Budget	Authorized Changes	Revised Total Budget	Total Committed	% Cmtd to Date	Actual Spent to Date	% Spent to Date	Balance To Spend	Comments
<b>FEASIBILITY STUDY AGREEMENT</b>										
0001-0000	OPM Feasibility Study/Schematic Design	\$ 400,000		\$ 400,000	\$ 400,000	100%	\$ 169,000	42%	\$ 231,000	
0002-0000	A&E Feasibility Study/Schematic Design	\$ 1,100,000		\$ 1,100,000	\$ 1,059,950	96%	\$ 369,432	34%	\$ 730,568	
0003-0000	Environmental & Site	\$ 300,000		\$ 300,000	\$ -	0%	\$ -	0%	\$ 300,000	
0004-0000	Other	\$ 200,000		\$ 200,000	\$ -	0%	\$ -	0%	\$ 200,000	
	<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,459,950</b>	<b>73%</b>	<b>\$ 538,432</b>	<b>27%</b>	<b>\$ 1,461,568</b>	
<b>TOTAL PROJECT BUDGET</b>		<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,459,950</b>	<b>73%</b>	<b>\$ 538,432</b>	<b>27%</b>	<b>\$ 1,461,568</b>	
<b>FUNDING SOURCES</b>										
	Maximum State Share	\$ 1,112,600	\$ 1,112,600							
	Local Share	\$ 887,400	\$ 887,400							
	<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ 2,000,000</b>							
				Project Budget	Scope Items Excluded	Contingencies	Basis of Total Facilities Grant	Reimbursement Rate		
				\$ 2,000,000	\$ -	\$ -	\$ 2,000,000	55.63%		

Committed: 73%

Expended: 27%

- All Contract Amendments have been committed against the original budget to indicate the remaining funds in each Budget Category
- All Invoices have been indicated in the Budget



# Status Updates



## MSBA Submission: Preliminary Design Program

- 1. Education Program
- 2. Existing Conditions Assessment
- 3. Site Development Requirements
- 4. Preliminary Options

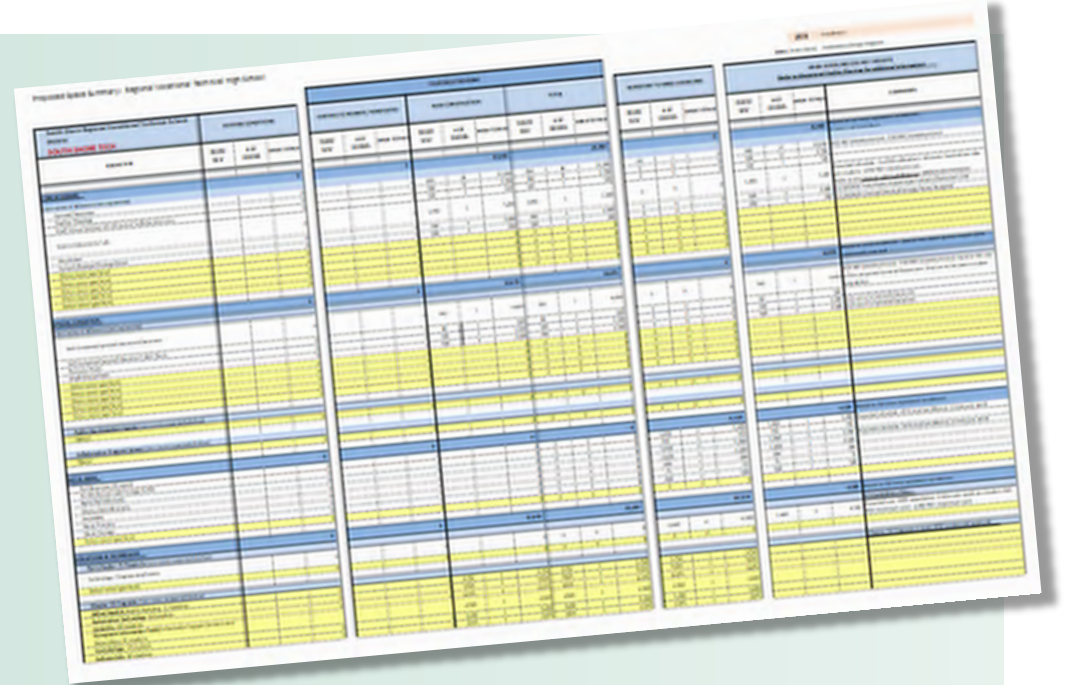


# Enrollment Options

## Quantitative Program Space Summaries

- **645** Students = 203,480 GSF (CTE:65,000 sf)
- 
- **750** Students = 228,540 GSF (CTE:74,000 sf)
- **805** Students = 240,000 GSF (CTE:77,000 sf)
- **900** Students = 260,000 GSF (CTE:87,000 sf)
- **975** Students = 278,000 GSF (CTE:93,000 sf)

*Existing Building = 125,000 sf*





# Preliminary Options - Areas

Option	645 students	750 students	805 students	900 students	975 students
Addition/ Renovation AR- 1 “L-shape”	201,500 sf	217,500 sf	230,400 sf	243,200 sf	254,500 sf
Addition/ Renovation AR- 2 “Lightwell”	188,100 sf	201,700 sf	209,600 sf	228,500 sf	236,100 sf
New Construction NC-1 “Courtyard”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-2 “Linear”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-3 “Wings”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf



# Existing Conditions



# Status Updates

## Site Development Requirements

### Key issues

- Vehicular Circulation, Bus & Car Access
- Parking requirements
- Athletic Fields & support spaces
- Outdoor Learning opportunities
- Utilities
- Outbuildings
- Adjacent Property

	existing				
Enrollments:	645	750	805	900	975
Staff: (Admin & Teachers):	130	150	160	175	185
Approx. 2/3 of seniors:	108	125	134	150	163
Approx. 1/3 of juniors:	53	61	66	74	80
Visitors:	20	23	24	27	29
<b>TOTAL Parking Spaces:</b>	<b>311</b>	<b>359</b>	<b>384</b>	<b>426</b>	<b>457</b>

# Status Updates



## Preliminary Options

- Base Repair
- Renovation
- Addition/ Renovation
- New Construction

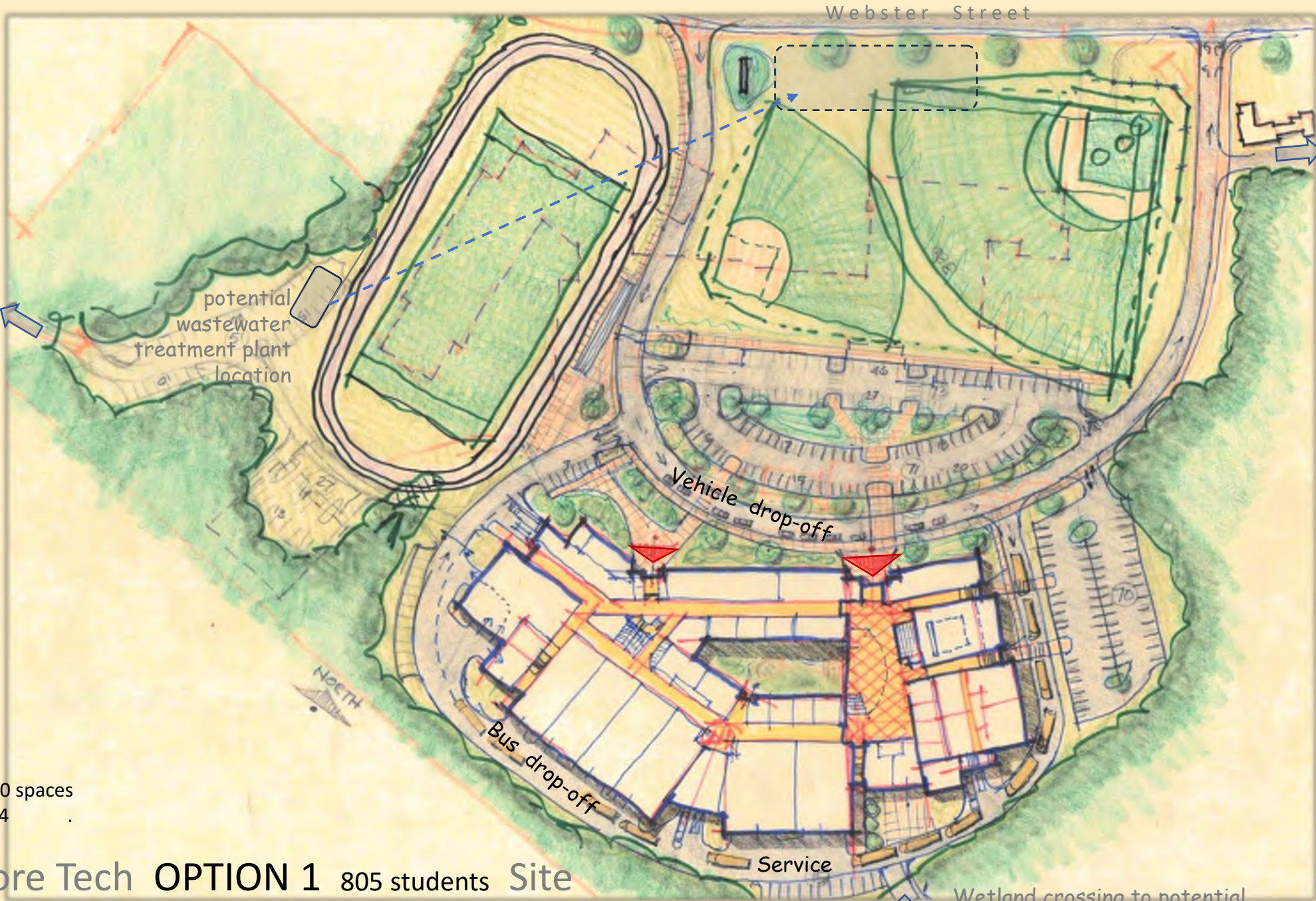


# Preliminary Options



## New Construction Options

1. “Courtyard”
2. “Linear”
3. “Wings”



Wetland crossing to potential additional parking & Main St. access

potential wastewater treatment plant location

District Offices

Vehicle drop-off

Bus drop-off

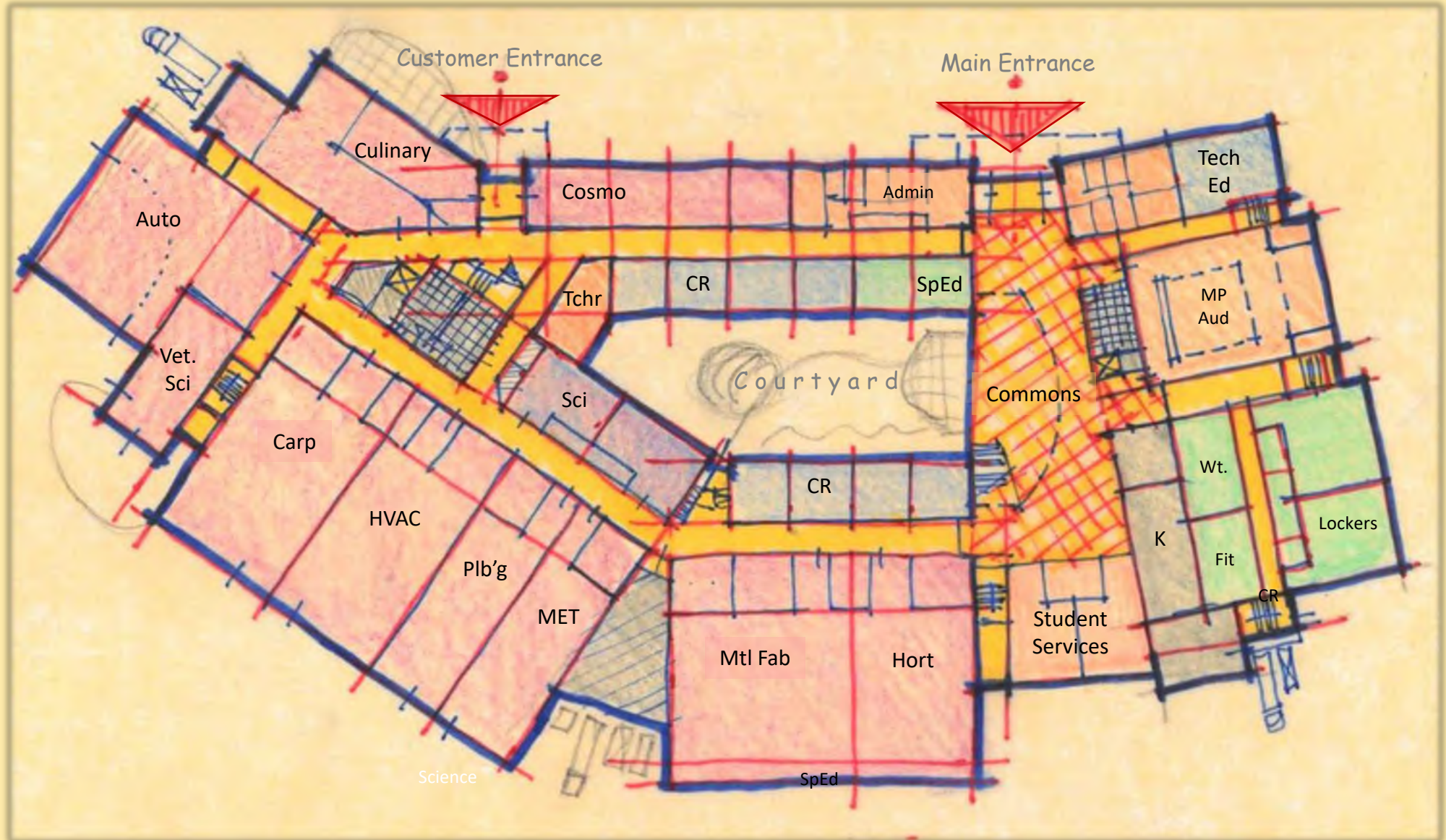
Service

Wetland crossing to potential additional parking/ playing field

Preliminary  
 Parking shown: 250 spaces  
 Target: 384

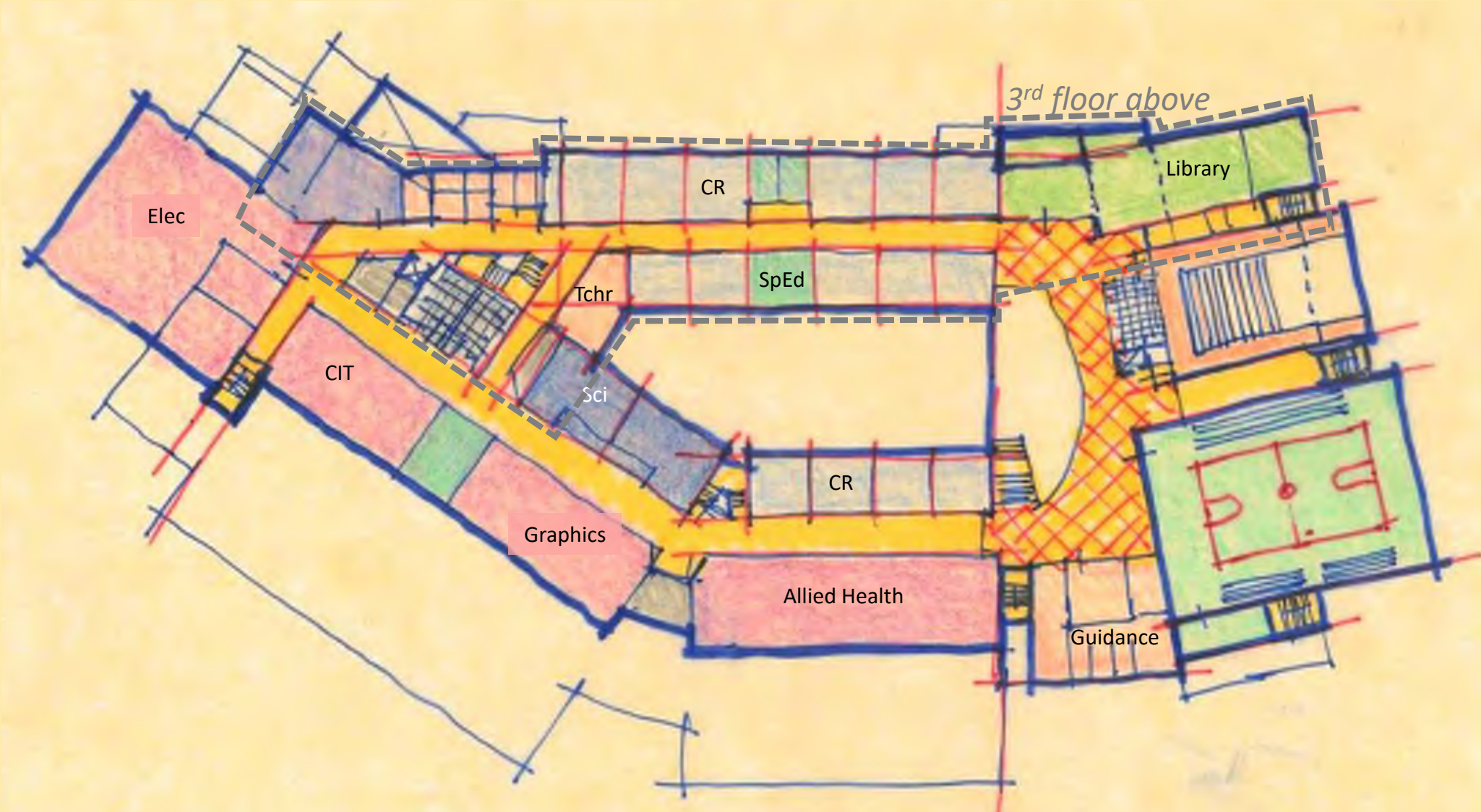
South Shore Tech OPTION 1 805 students Site





South Shore Tech OPTION 1 1<sup>st</sup> Floor





South Shore Tech OPTION 1 2<sup>nd</sup> Floor







Webster Street

District Offices

Wetland crossing to potential additional parking & Main St. access

potential wastewater treatment plant location

Detention/replication area

Vehicle drop-off

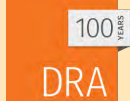
Bus drop-off

Service

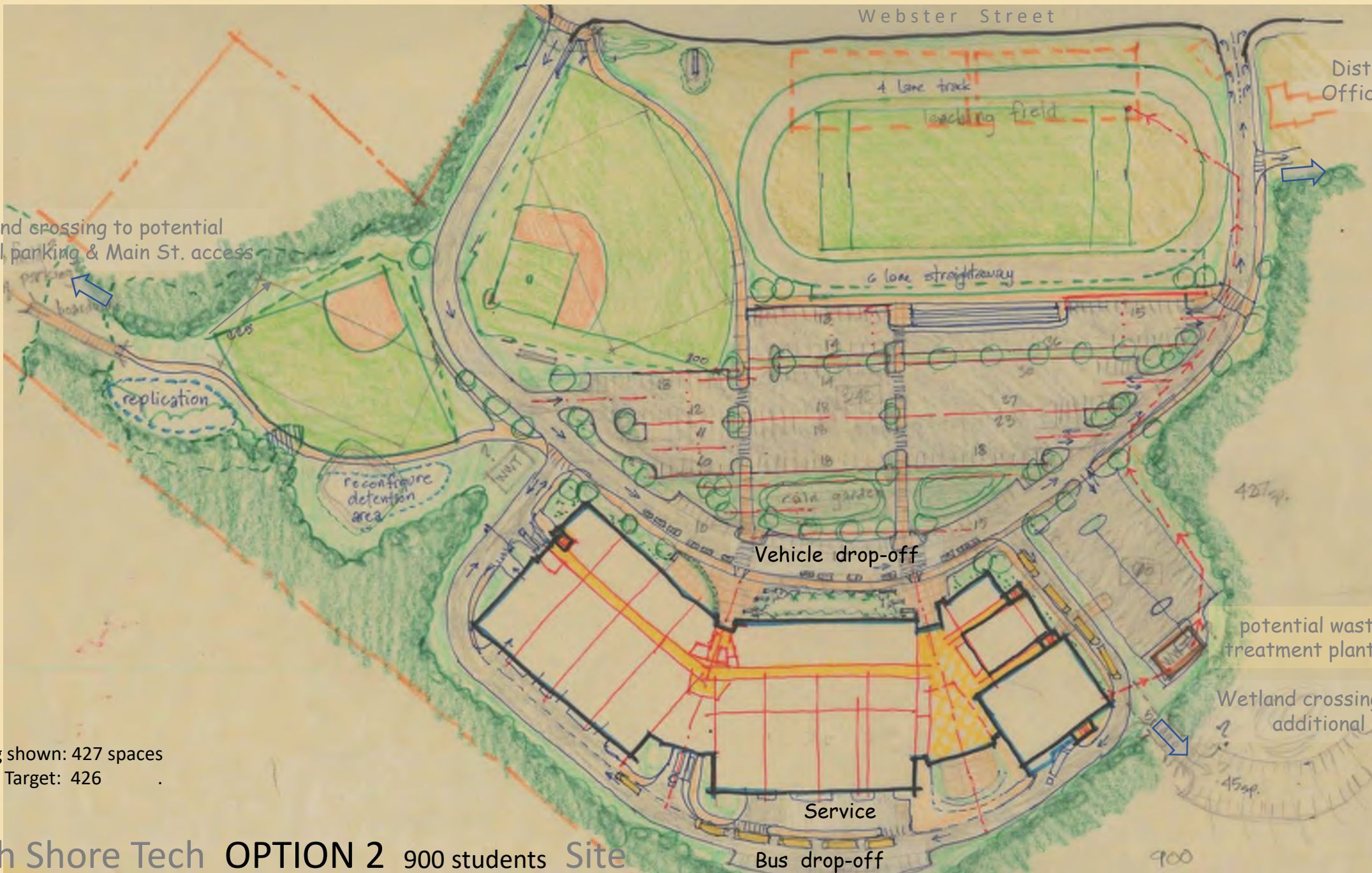
Wetland crossing to potential additional parking/ playing field

Preliminary  
Parking shown: 320 spaces  
Target: 384

# South Shore Tech OPTION 2 805 students Site







Webster Street

District Offices??

Wetland crossing to potential additional parking & Main St. access

Parking shown: 427 spaces  
Target: 426

potential wastewater treatment plant location

Wetland crossing to potential additional parking

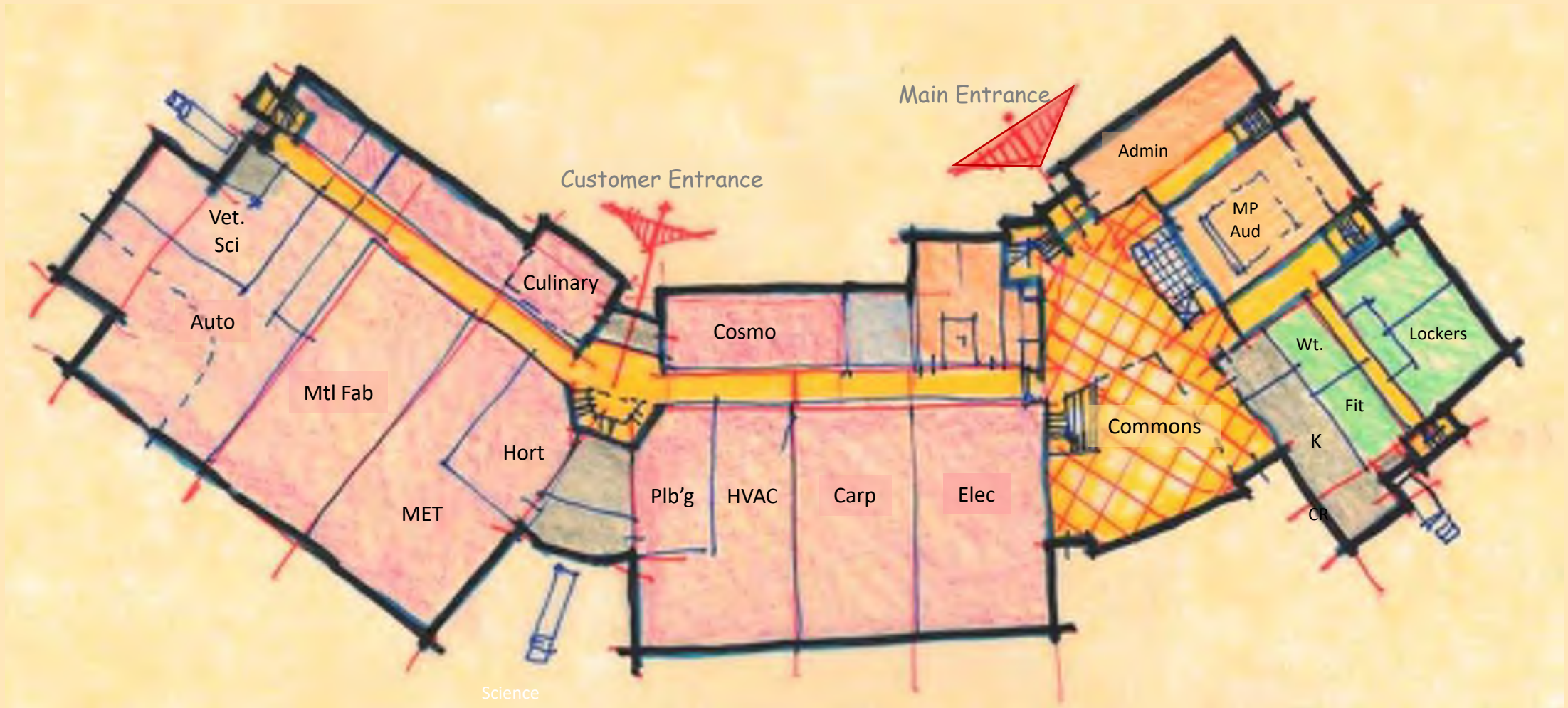
Vehicle drop-off

Service

Bus drop-off

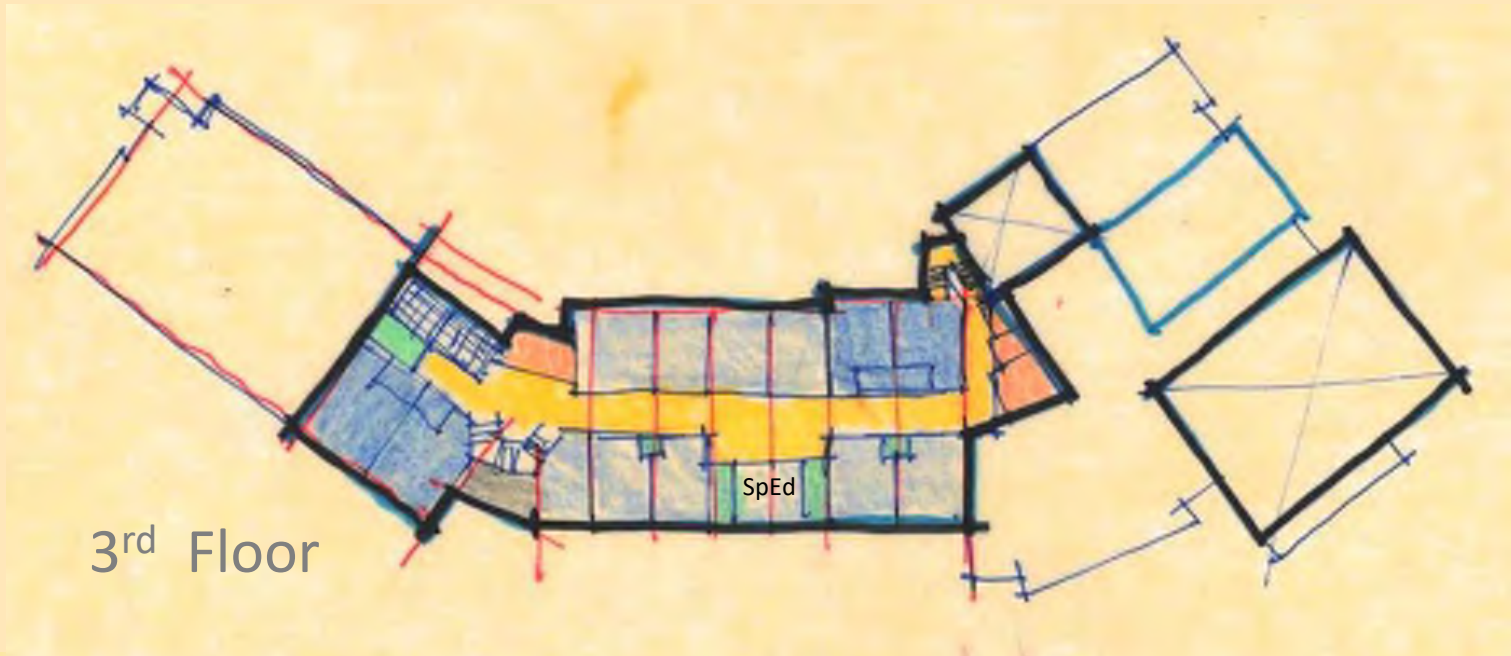
South Shore Tech OPTION 2 900 students Site



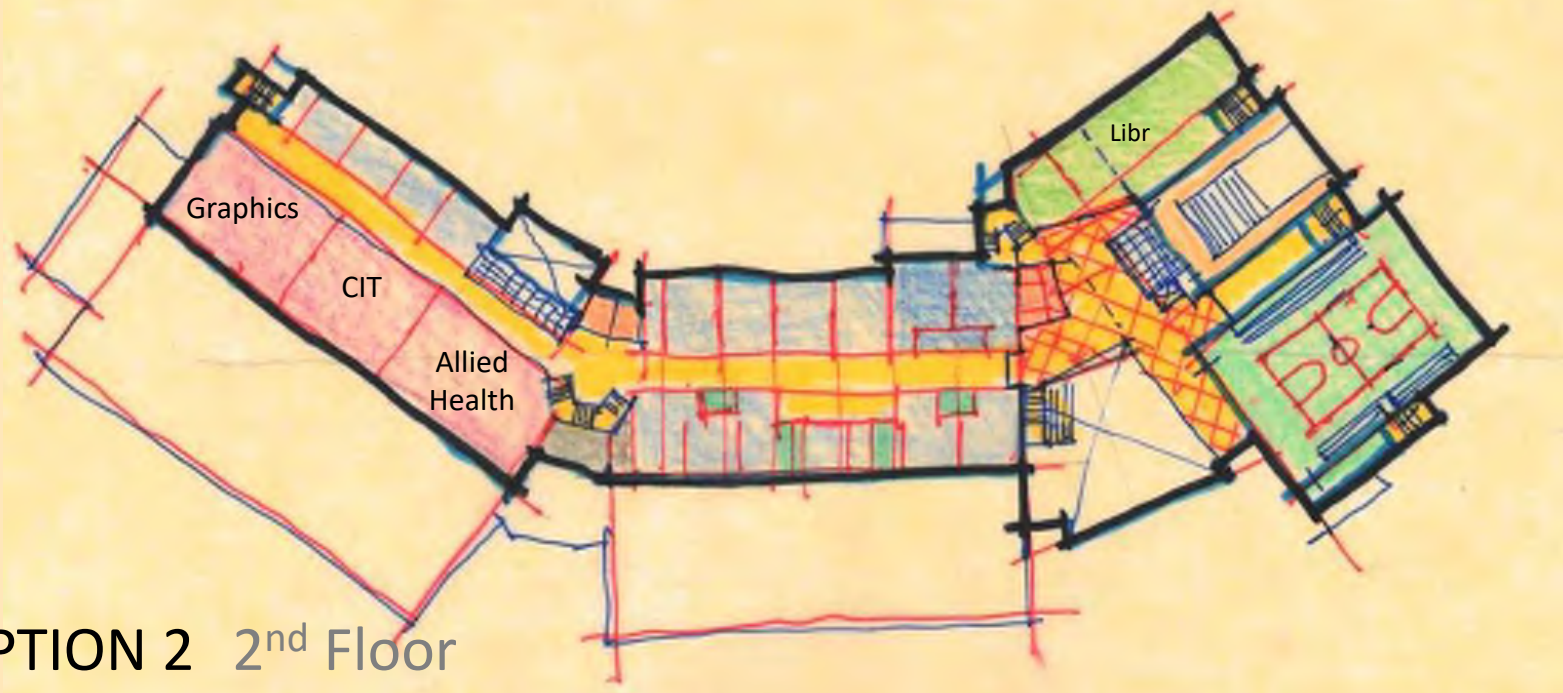


South Shore Tech OPTION 2 1<sup>st</sup> Floor



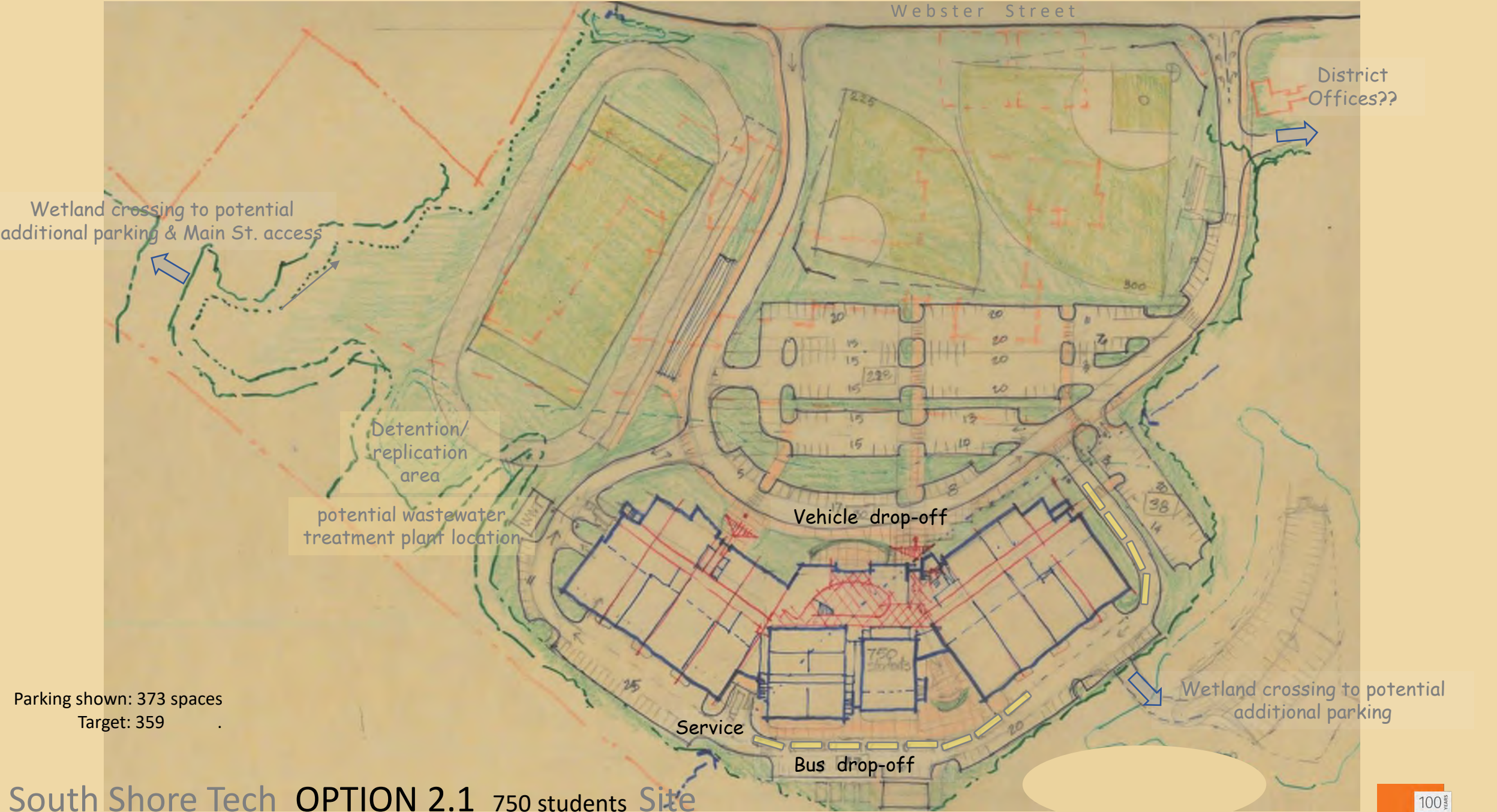


3<sup>rd</sup> Floor



South Shore Tech OPTION 2 2<sup>nd</sup> Floor

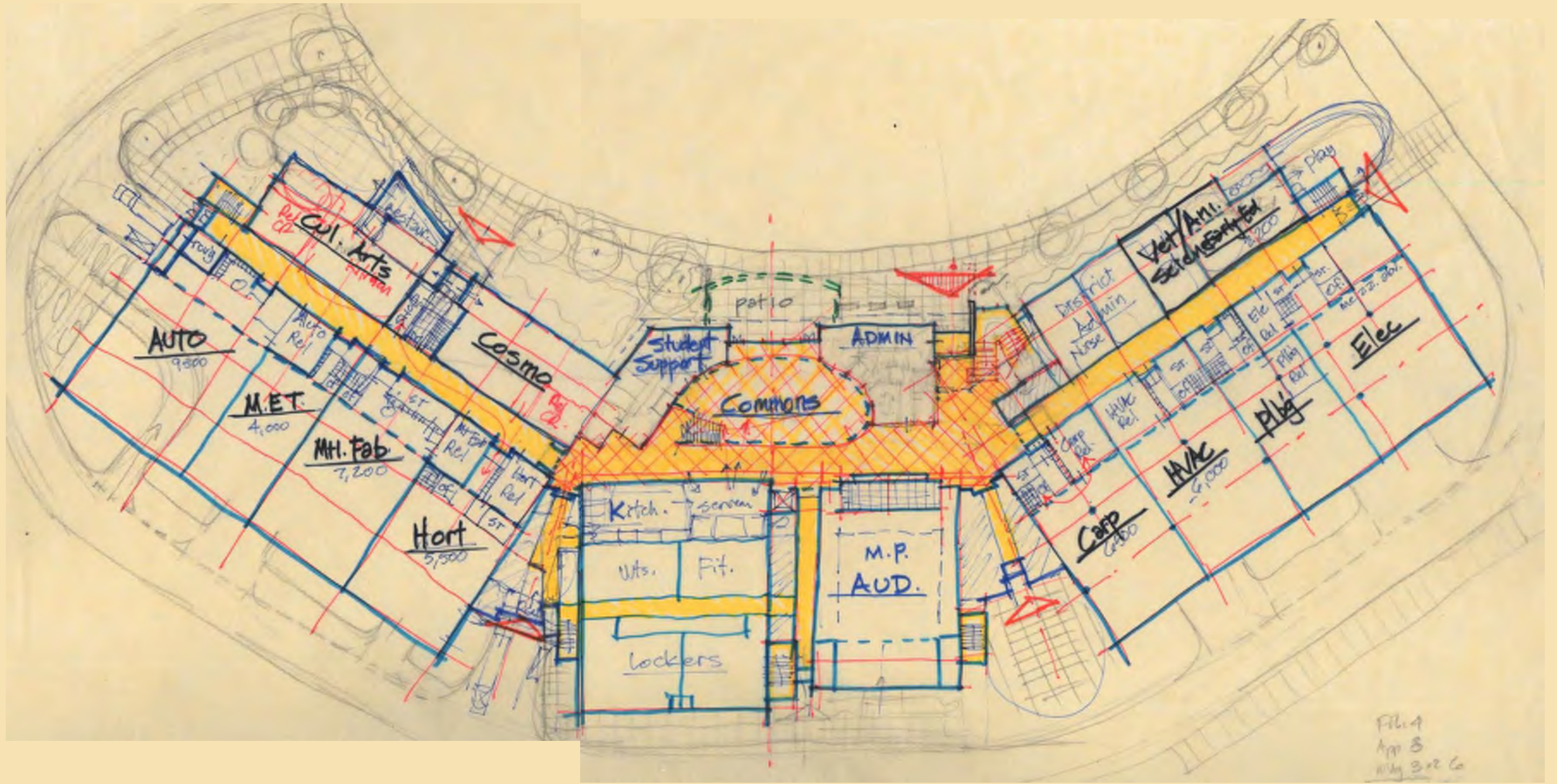




Parking shown: 373 spaces  
 Target: 359

South Shore Tech OPTION 2.1 750 students Site

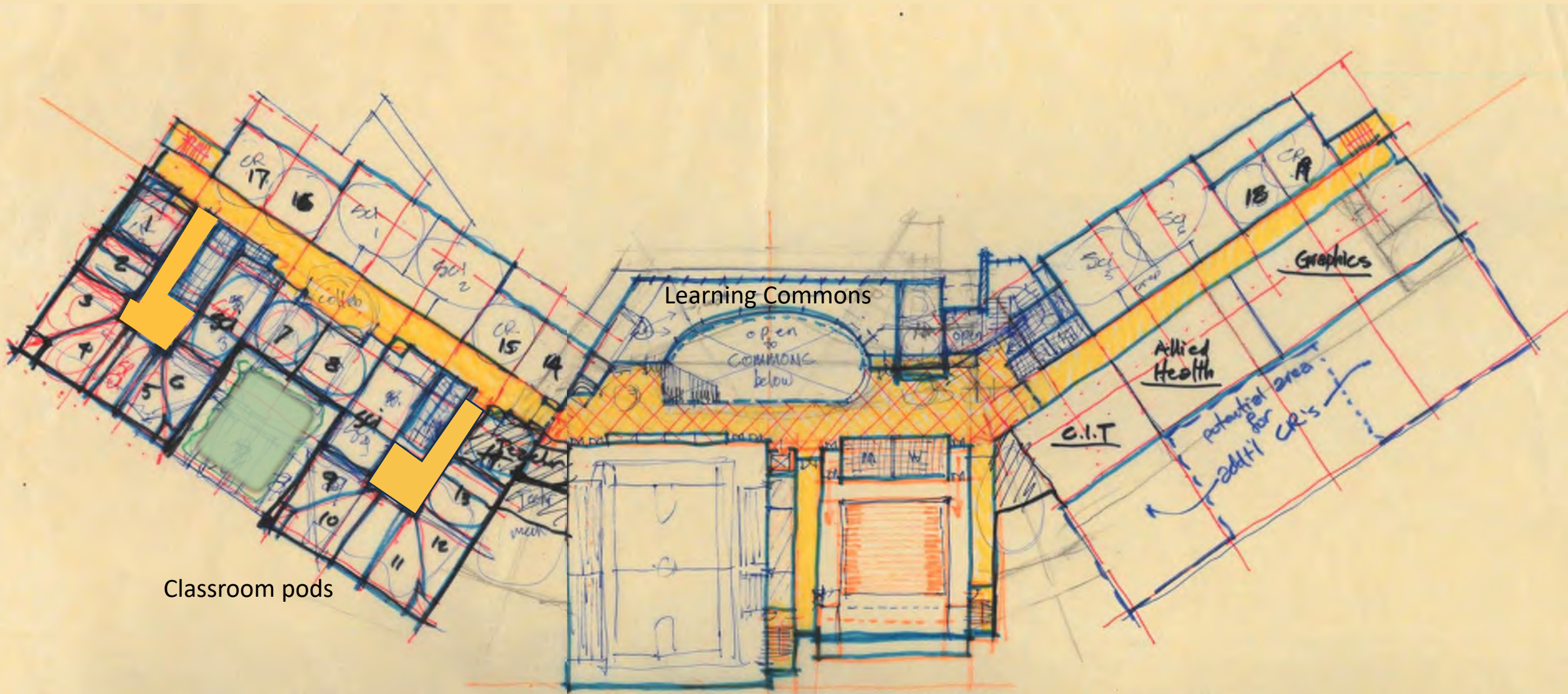




South Shore Tech OPTION 2.1

1<sup>st</sup> Floor

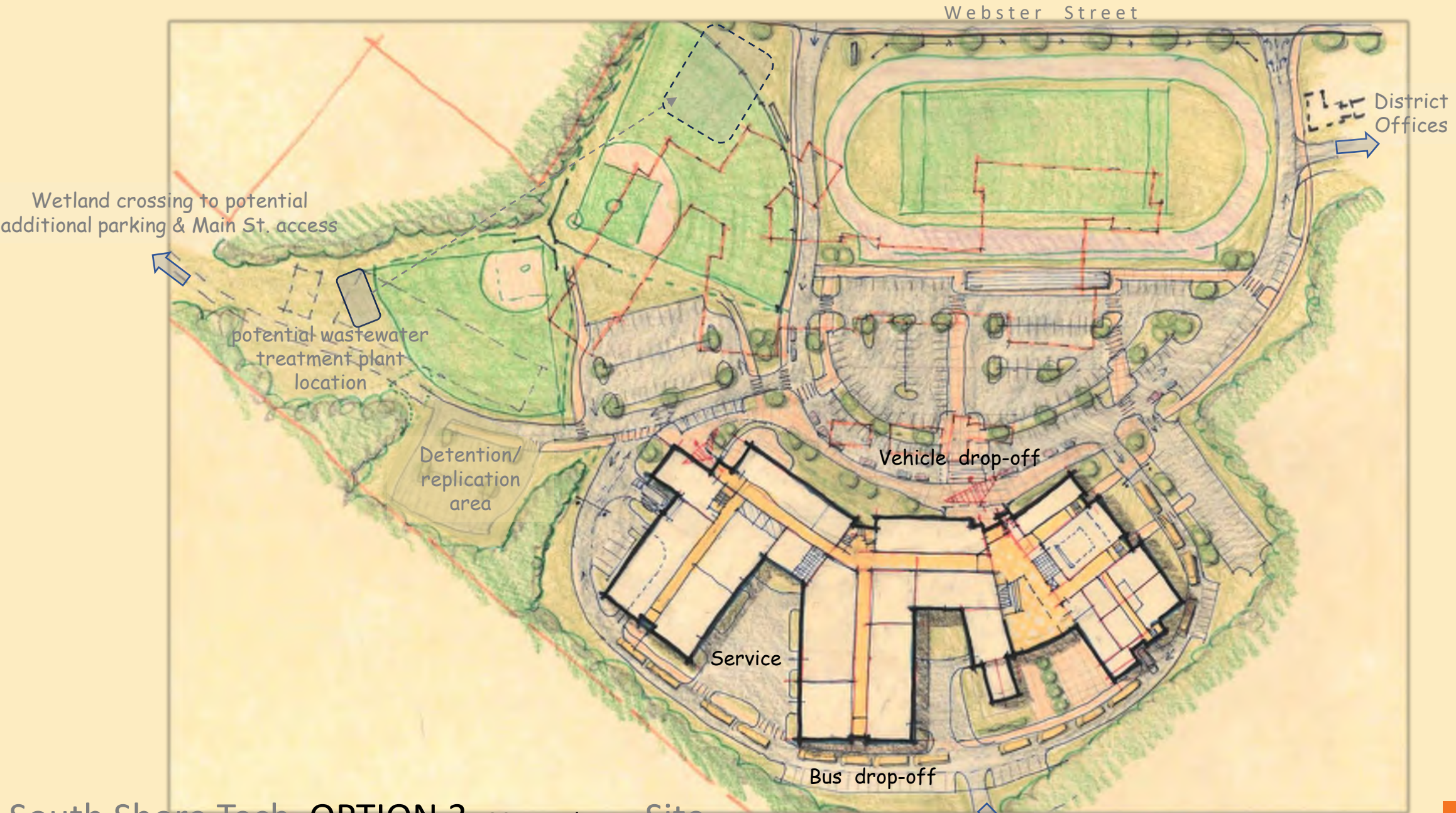












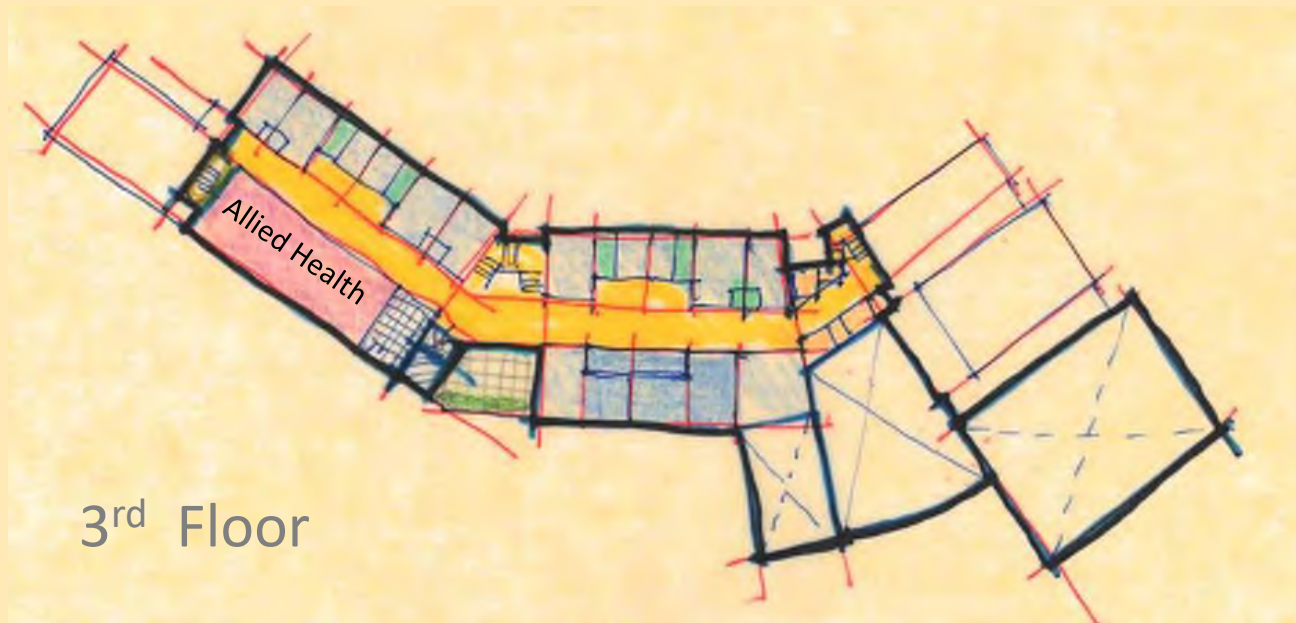
South Shore Tech **OPTION 3** 805 students Site

Wetland crossing to potential additional parking/ playing field

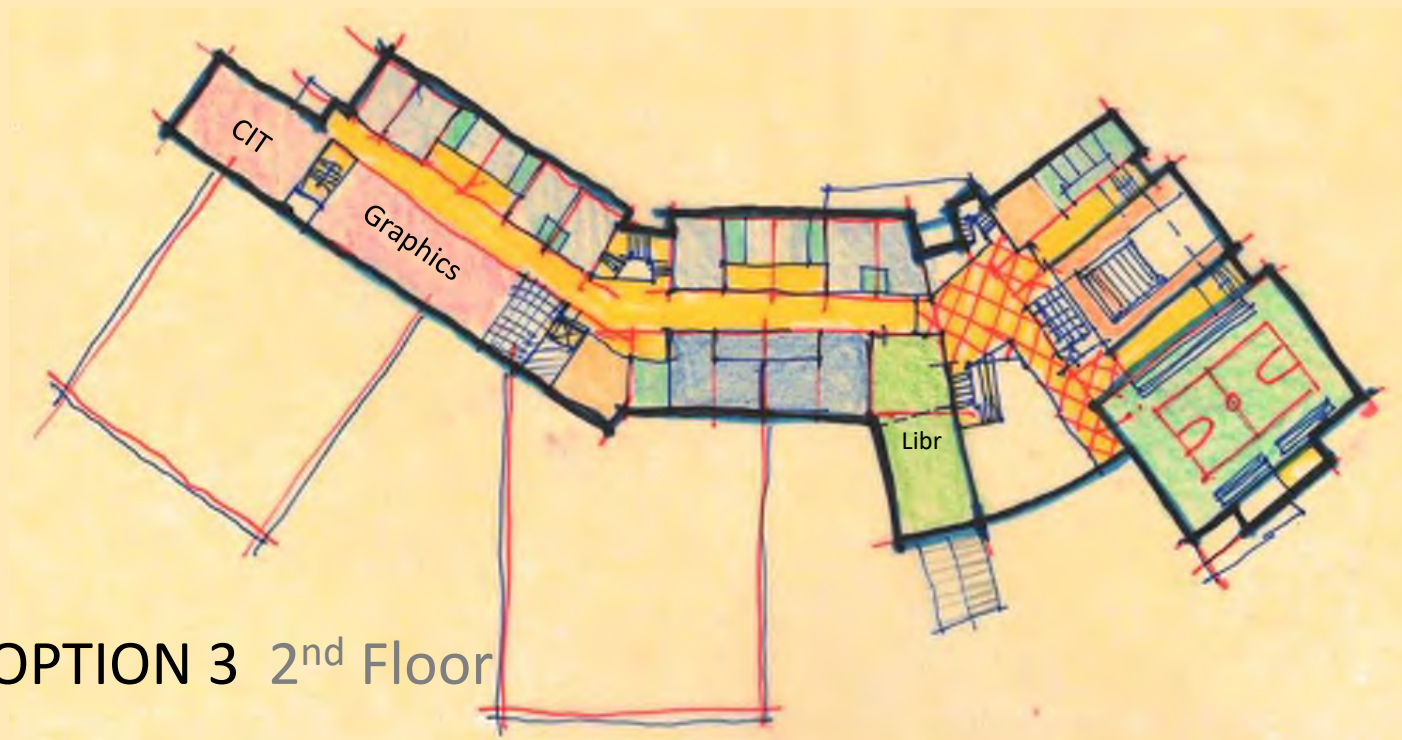




South Shore Tech OPTION 3 1<sup>st</sup> Floor

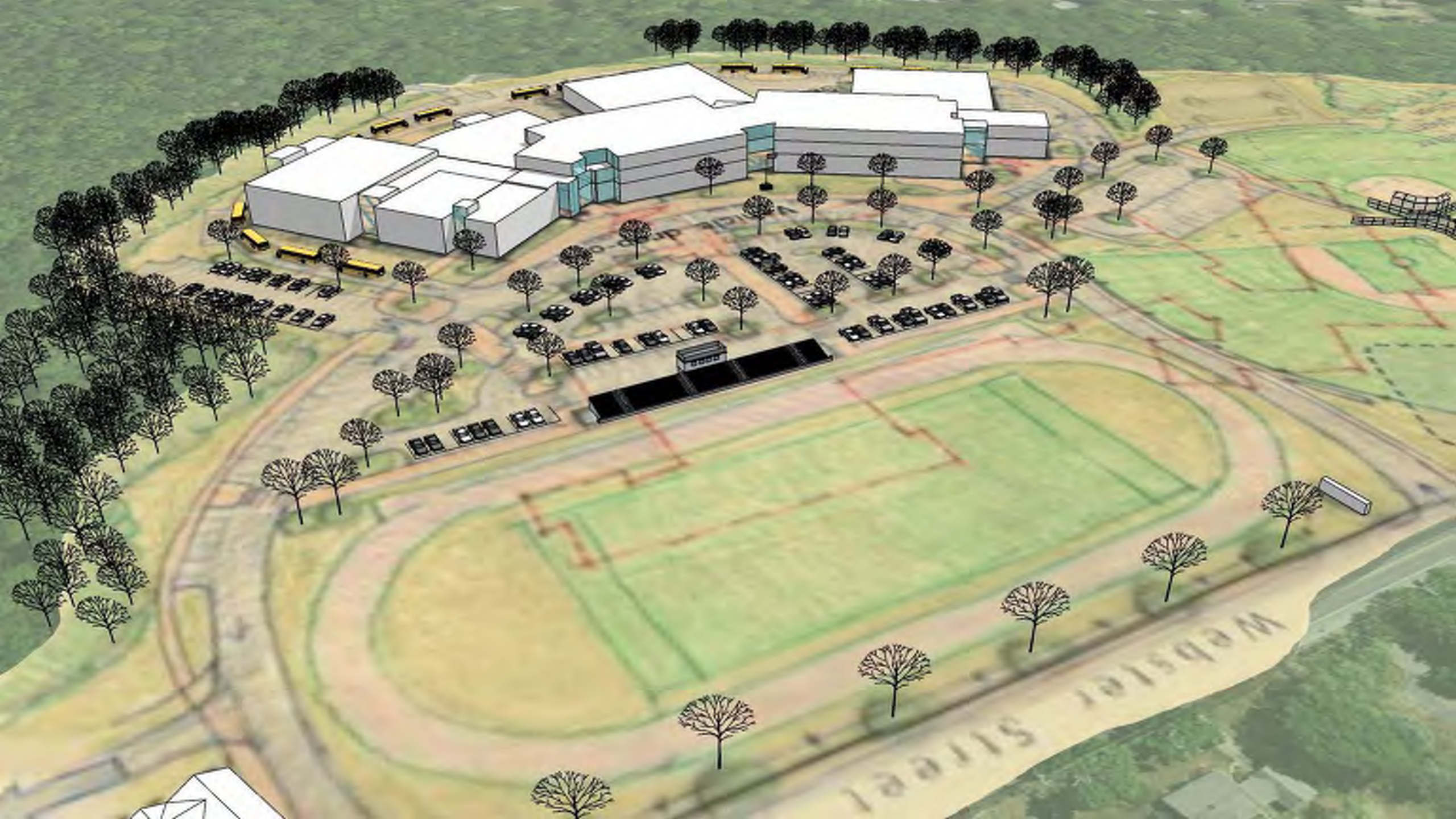


3<sup>rd</sup> Floor



South Shore Tech OPTION 3 2<sup>nd</sup> Floor









View from Webster Street

# Preliminary Options


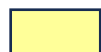



## Addition / Renovation Options

1. L-Shaped
2. Courtyard

# Existing Conditions



-  Below standard
-  Marginal
-  Meets standard

*Missing:*



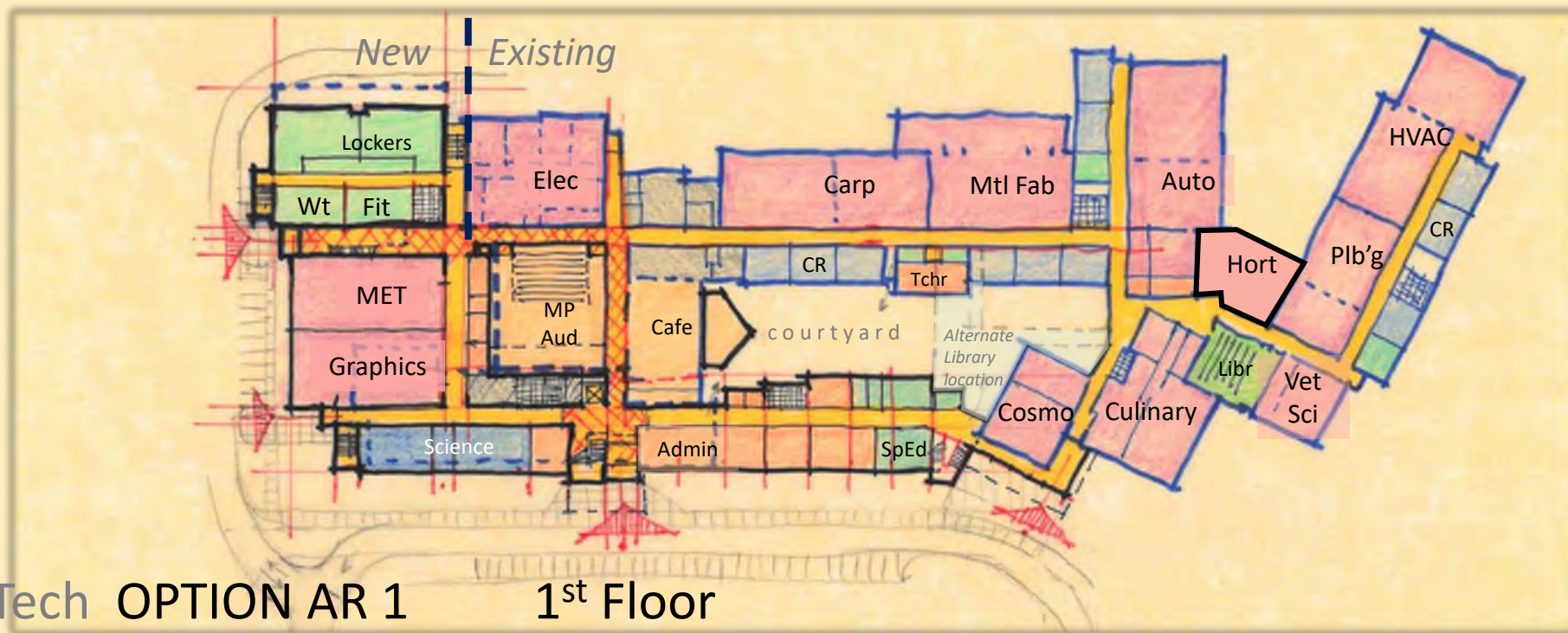
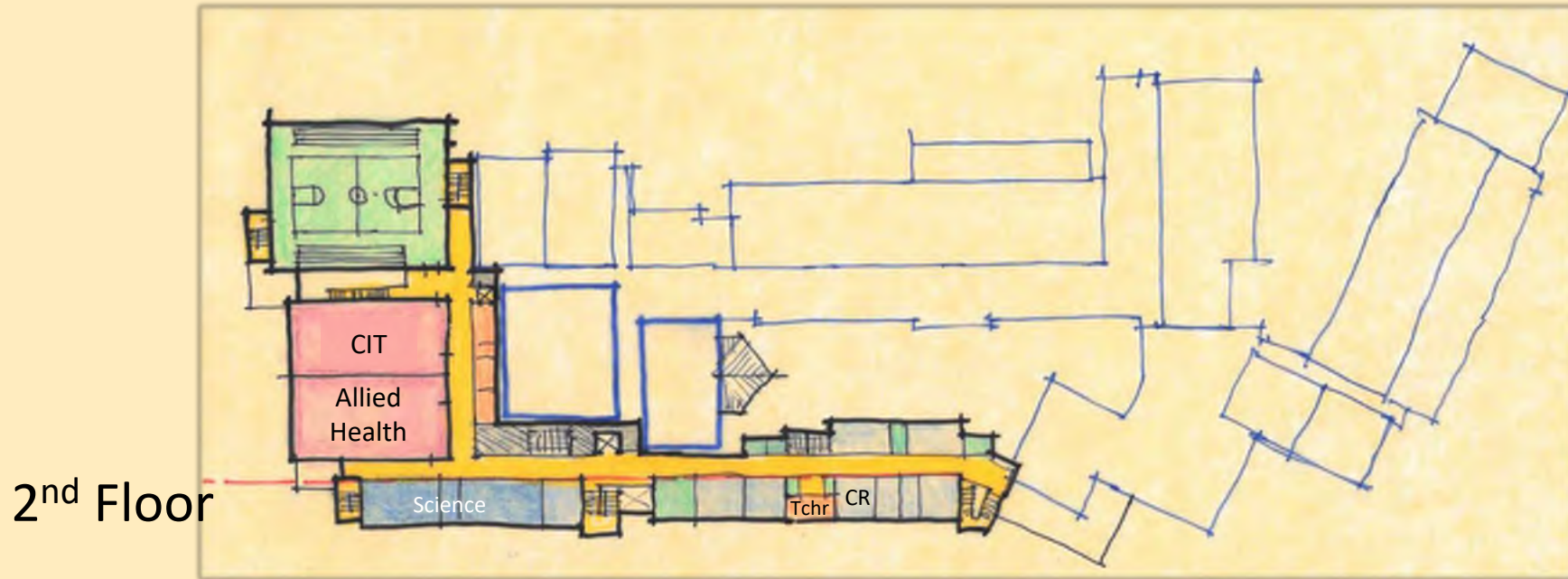
*New Ch. 74 Programs*





Addition/Renovation Option

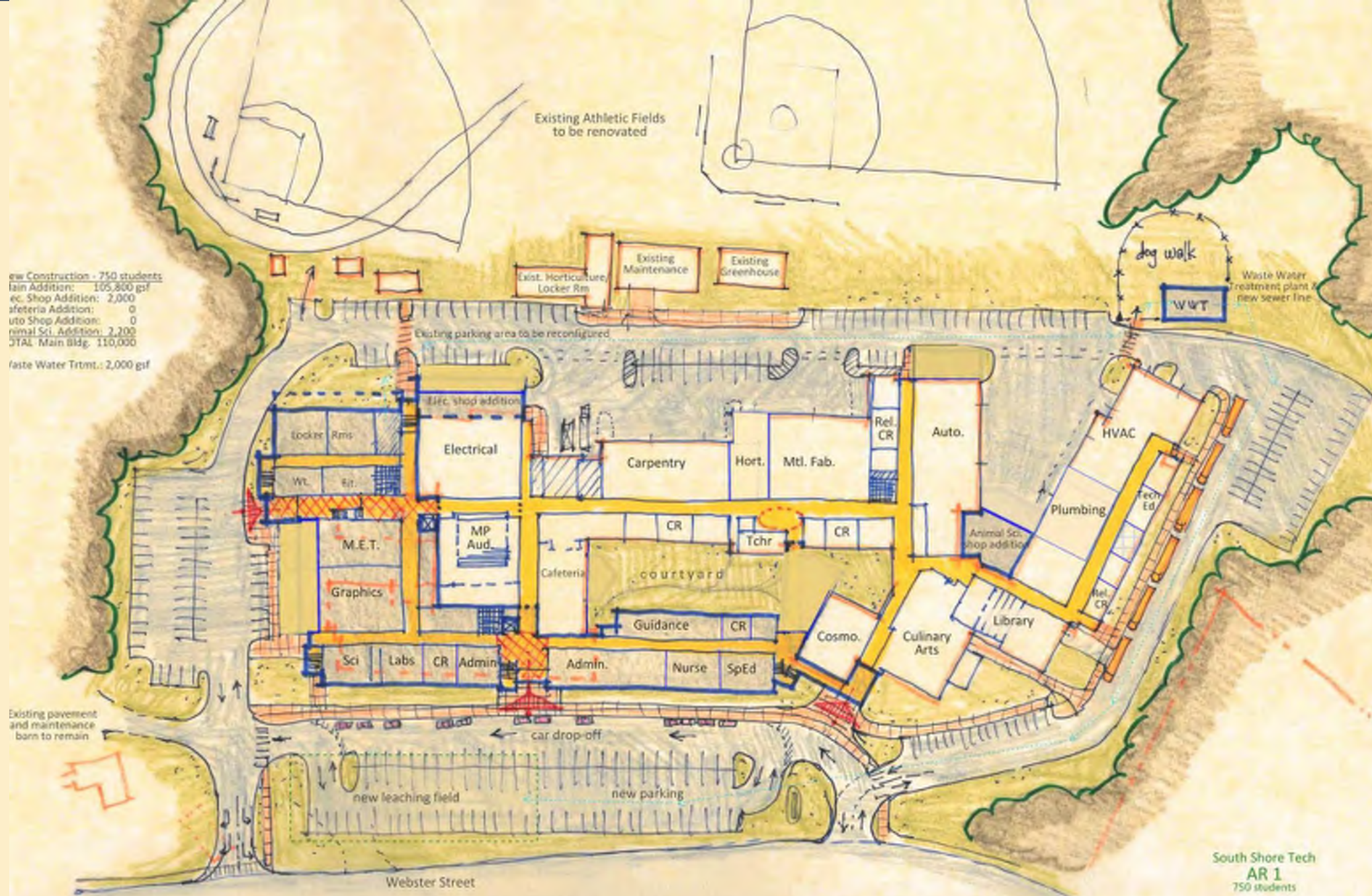










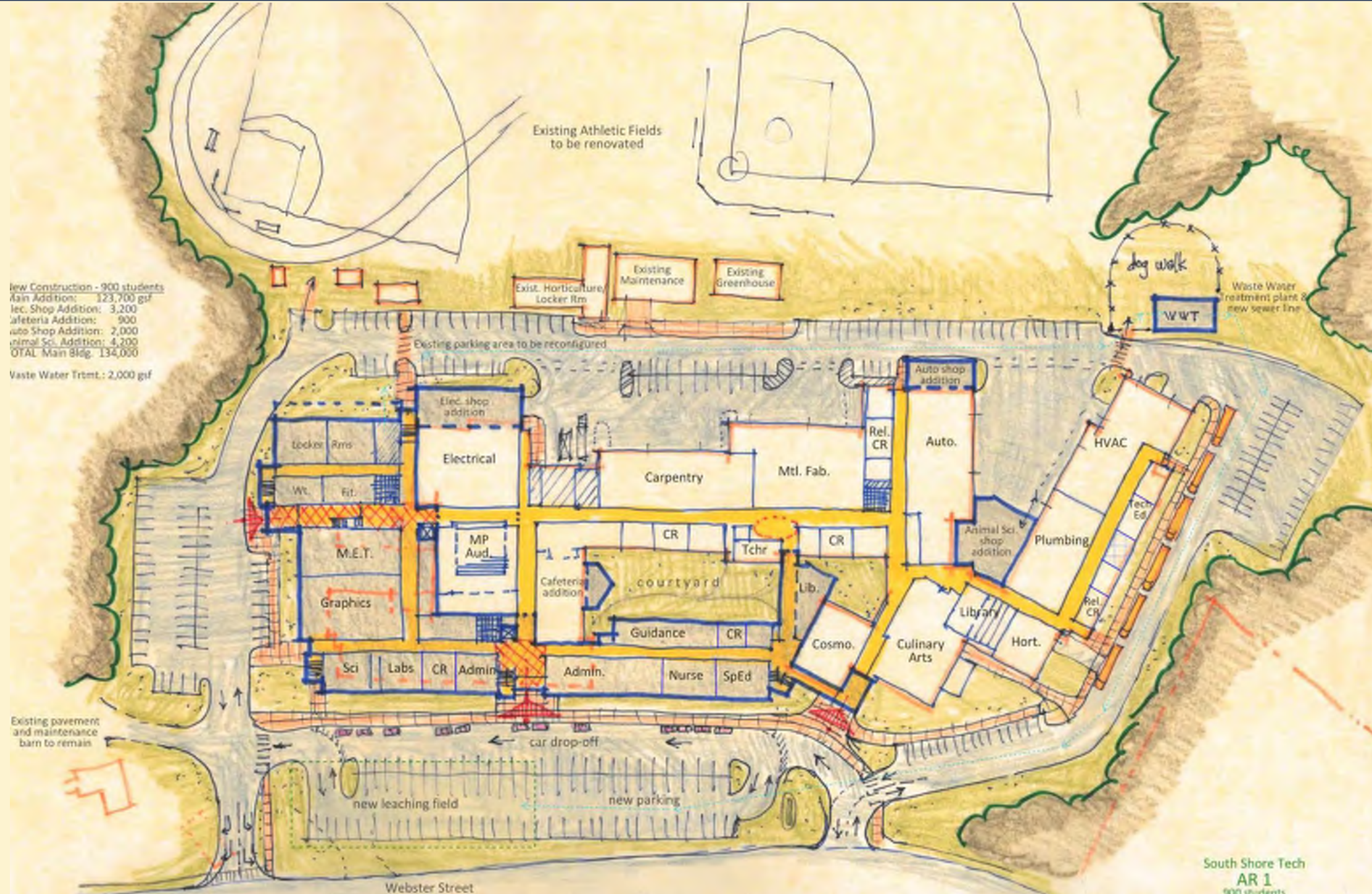


South Shore Tech  
 AR 1  
 750 students

South Shore Tech OPTION AR 1 750 students Site Plan



New Construction - 900 students  
 Main Addition: 123,700 sq ft  
 Elec. Shop Addition: 3,200  
 Cafeteria Addition: 900  
 Auto Shop Addition: 2,000  
 Animal Sci. Addition: 4,200  
 TOTAL Main Bldg: 134,000  
 Waste Water Trtmt.: 2,000 gpf

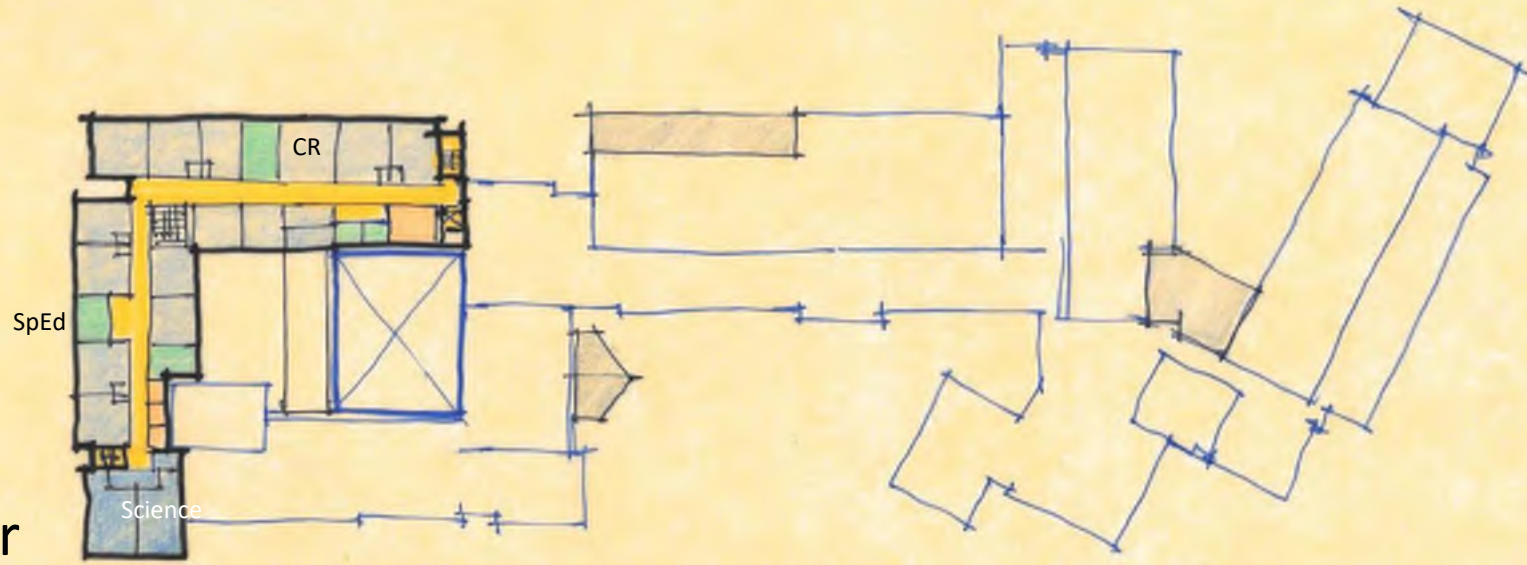


South Shore Tech  
 AR 1  
 900 students

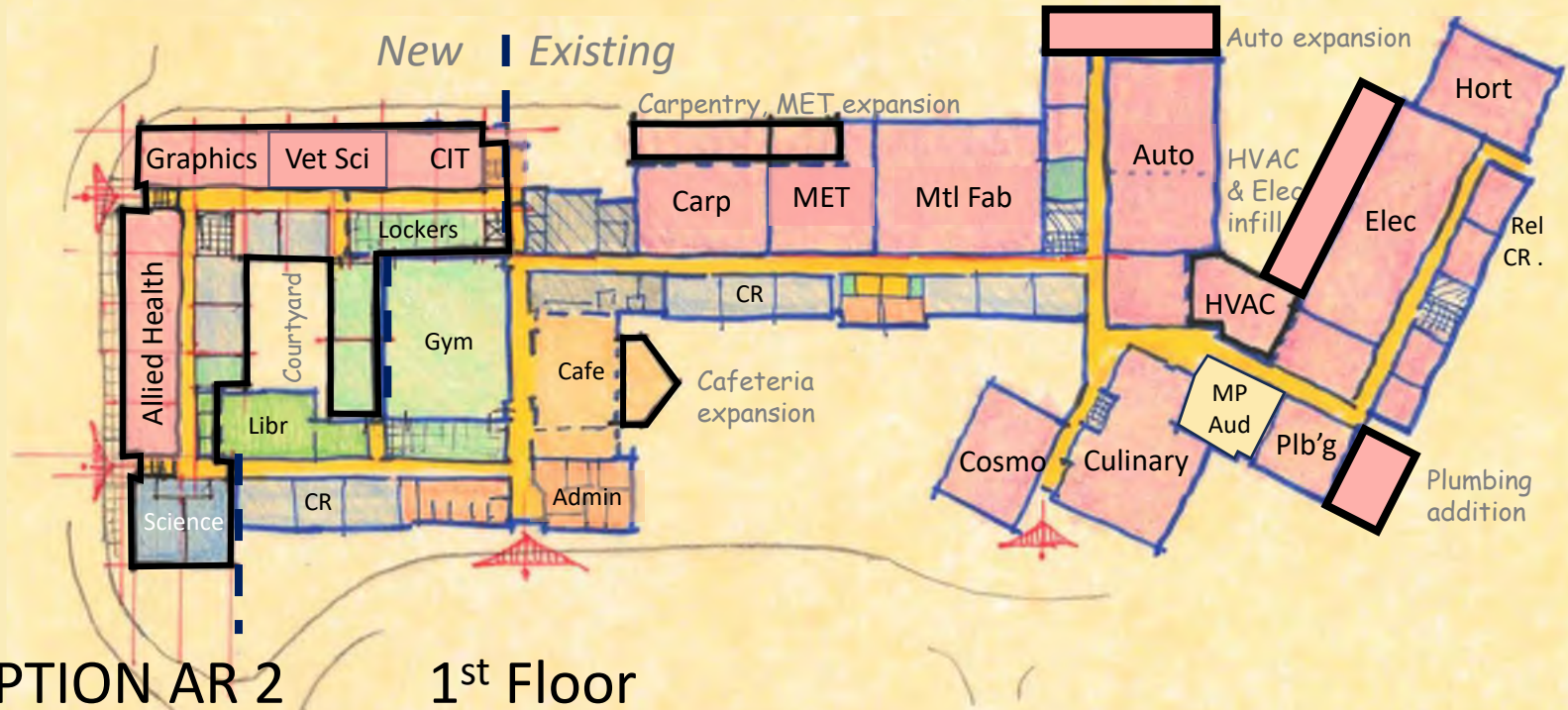
South Shore Tech OPTION AR 1 900 students Site Plan



2<sup>nd</sup> Floor

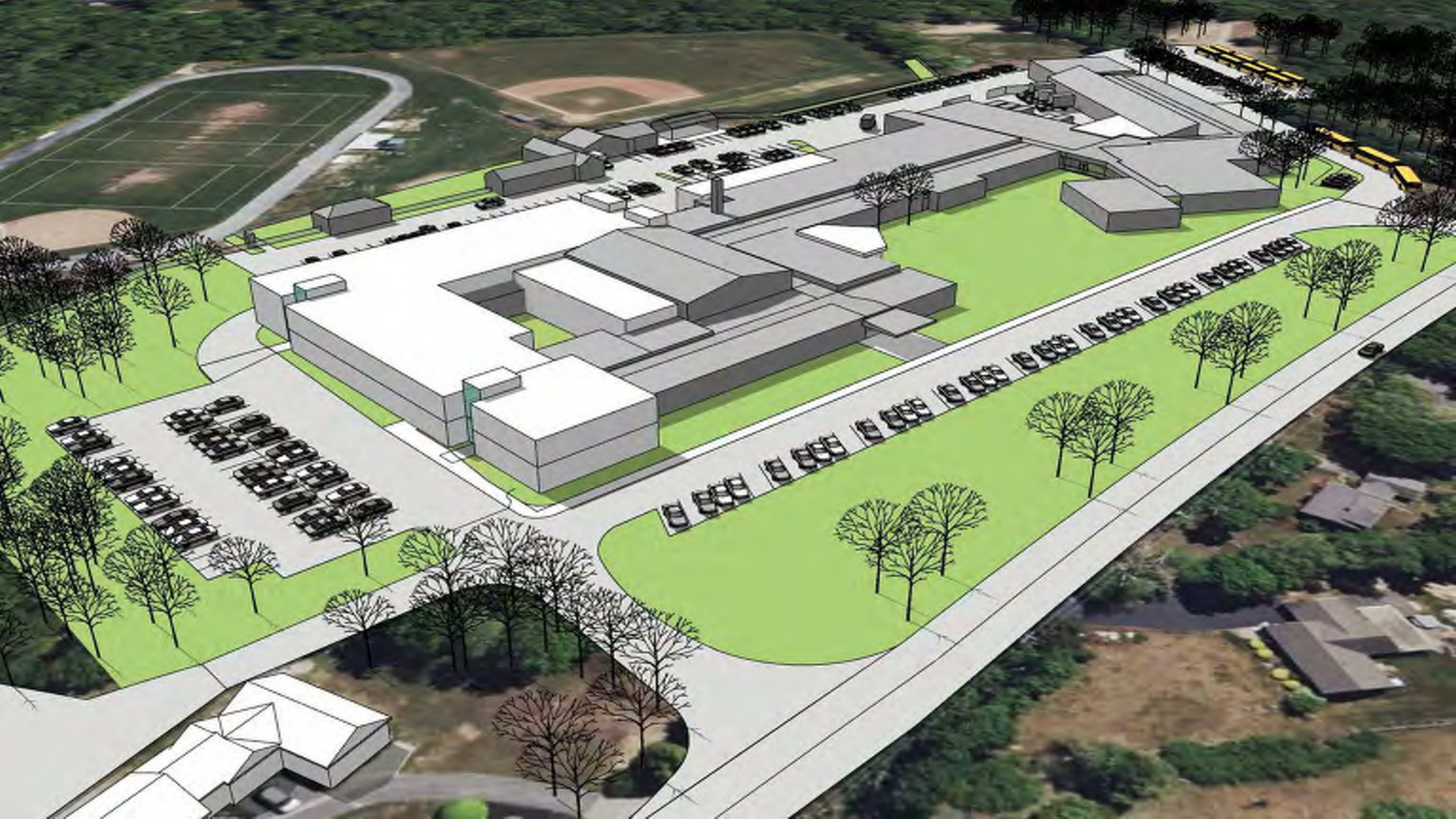


New | Existing



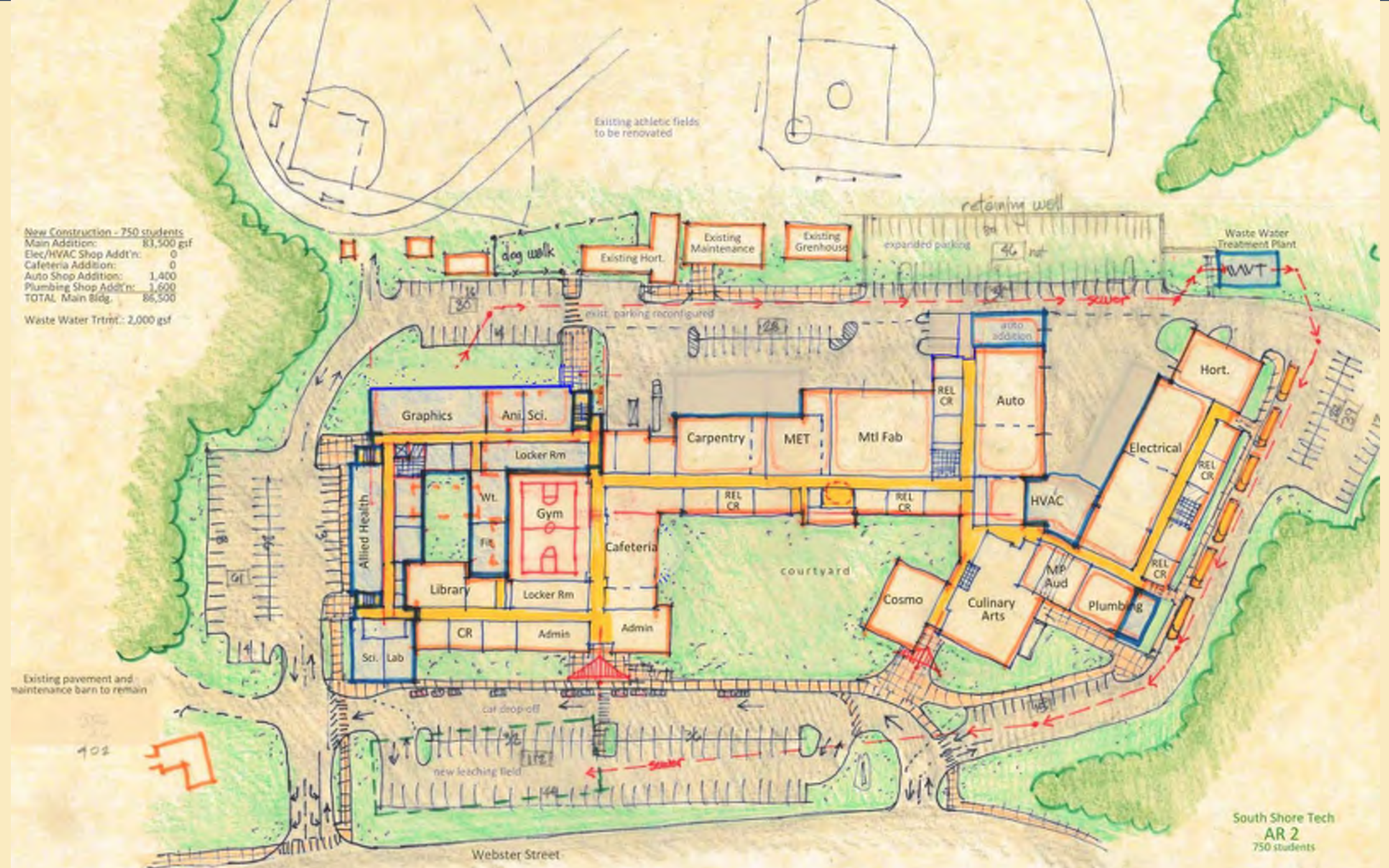
1<sup>st</sup> Floor







New Construction - 750 students  
 Main Addition: 83,500 gsf  
 Elec/HVAC Shop Add'n: 0  
 Cafeteria Addition: 0  
 Auto Shop Addition: 1,400  
 Plumbing Shop Add'n: 1,600  
 TOTAL Main Bldg: 86,500  
 Waste Water Trtmt.: 2,000 gsf



South Shore Tech  
 AR 2  
 750 students

South Shore Tech OPTION AR 2 750 students Site Plan







# Preliminary Options – Construction Costs



Student Enrollment Range: 645 - 975 Students	645 Students			750 Students		
	New* (all 3 options)	Add/Reno AR1 L Shape	Add Reno AR2 Lightwell	New* (all 3 options)	Add/Reno AR1 L Shape	Add Reno AR2 Lightwell
<b>TOTAL DIRECT COSTS</b>	<b>\$ 140,095,980</b>	<b>\$ 122,836,000</b>	<b>\$ 114,940,000</b>	<b>\$ 157,349,790</b>	<b>\$ 135,168,000</b>	<b>\$ 125,993,000</b>
Contingencies, General Requirments, General Conditions, Insurance, Bonds, CM Fee	\$ 54,109,800	\$ 57,169,900	\$ 52,820,700	\$ 60,773,900	\$ 62,714,600	\$ 57,788,300
Modular Classrooms	\$ -	\$ 9,350,000	\$ 5,500,000	\$ -	\$ 9,350,000	\$ 5,500,000
Phasing / Scheduling Premium	\$ -	\$ 1,960,000	\$ 1,800,000	\$ -	\$ 2,150,000	\$ 1,960,000
Escalation	\$ 40,784,000	\$ 51,656,000	\$ 47,267,000	\$ 45,806,000	\$ 56,534,000	\$ 51,636,000
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$ 234,989,780</b>	<b>\$ 242,971,900</b>	<b>\$ 222,327,700</b>	<b>\$ 263,929,690</b>	<b>\$ 265,916,600</b>	<b>\$ 242,877,300</b>
Soft Costs Calculated at 25%	\$ 58,747,445	\$ 60,742,975	\$ 55,581,925	\$ 65,982,423	\$ 66,479,150	\$ 60,719,325
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$ 293,737,225</b>	<b>\$ 303,714,875</b>	<b>\$ 277,909,625</b>	<b>\$ 329,912,113</b>	<b>\$ 332,395,750</b>	<b>\$ 303,596,625</b>

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Preliminary Schematic Report (PSR) phase to assist the committee in defining the single preferred solution to proceed into the Schematic Design (SD) phase. The actual costs and total project budget will be established at the end of the Schematic Design (SD) phase for the district's preferred solution.

\*Costs are the same across all New Construction Options for each enrollment - shown as a single cost for simplicity.

\*\*Costs based on CM at Risk delivery method to simplify comparison



# Preliminary Options – Construction Costs



Student Enrollment Range: 645 - 975 Students	805 Students			900 Students		
	New* (all 3 options)	Add/Reno AR1 L Shape	Add Reno AR2 Lightwell	New* (all 3 options)	Add/Reno AR1 L Shape	Add Reno AR2 Lightwell
<b>TOTAL DIRECT COSTS</b>	<b>\$ 164,160,000</b>	<b>\$ 142,658,000</b>	<b>\$ 130,559,000</b>	<b>\$ 175,474,000</b>	<b>\$ 149,949,000</b>	<b>\$ 141,157,000</b>
Contingencies, General Requirments, General Conditions, Insurance, Bonds, CM Fee	\$ 63,403,600	\$ 66,081,000	\$ 59,842,100	\$ 67,773,900	\$ 69,359,500	\$ 64,607,000
Modular Classrooms	\$ -	\$ 9,350,000	\$ 5,500,000	\$ -	\$ 9,350,000	\$ 5,500,000
Phasing / Scheduling Premium	\$ -	\$ 2,260,000	\$ 2,030,000	\$ -	\$ 2,370,000	\$ 2,190,000
Escalation	\$ 47,789,000	\$ 59,495,000	\$ 53,442,000	\$ 51,083,000	\$ 62,378,000	\$ 57,633,000
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$ 275,352,600</b>	<b>\$ 279,844,000</b>	<b>\$ 251,373,100</b>	<b>\$ 294,330,900</b>	<b>\$ 293,406,500</b>	<b>\$ 271,087,000</b>
Soft Costs Calculated at 25%	\$ 68,838,150	\$ 69,961,000	\$ 62,843,275	\$ 73,582,725	\$ 73,351,625	\$ 67,771,750
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$ 344,190,750</b>	<b>\$ 349,805,000</b>	<b>\$ 314,216,375</b>	<b>\$ 367,913,625</b>	<b>\$ 366,758,125</b>	<b>\$ 338,858,750</b>

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Preliminary Schematic Report (PSR) phase to assist the committee in defining the single preferred solution to proceed into the Schematic Design (SD) phase. The actual costs and total project budget will be established at the end of the Schematic Design (SD) phase for the district's preferred solution.

\*Costs are the same across all New Construction Options for each enrollment - shown as a single cost for simplicity.

\*\*Costs based on CM at Risk delivery method to simplify comparison

# Preliminary Options – Construction Costs



Student Enrollment Range: 645 - 975 Students	975 Students		
	New* (all 3 options)	Add/Reno AR1 L Shape	Add Reno AR2 Lightwell
<b>TOTAL DIRECT COSTS</b>	<b>\$ 185,592,800</b>	<b>\$ 157,224,000</b>	<b>\$ 145,672,000</b>
Contingencies, General Requirments, General Conditions, Insurance, Bonds, CM Fee	\$ 71,787,800	\$ 73,431,000	\$ 66,637,200
Modular Classrooms	\$ -	\$ 13,200,000	\$ 5,500,000
Phasing / Scheduling Premium	\$ -	\$ 2,530,000	\$ 2,260,000
Escalation	\$ 54,109,000	\$ 66,524,000	\$ 59,419,000
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$ 311,489,600</b>	<b>\$ 312,909,000</b>	<b>\$ 279,488,200</b>
Soft Costs Calculated at 25%	\$ 77,872,400	\$ 78,227,250	\$ 69,872,050
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$ 389,362,000</b>	<b>\$ 391,136,250</b>	<b>\$ 349,360,250</b>

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Preliminary Schematic Report (PSR) phase to assist the committee in defining the single preferred solution to proceed into the Schematic Design (SD) phase. The actual costs and total project budget will be established at the end of the Schematic Design (SD) phase for the district's preferred solution.

\*Costs are the same across all New Construction Options for each enrollment - shown as a single cost for simplicity.

\*\*Costs based on CM at Risk delivery method to simplify comparison

Preliminary Evaluation Matrix - South Shore Tech - Concept Options - **WORKING DRAFT**



Updated:  
8/24/2023

Evaluation Criteria		Concept Options						
		MSBA Required	Renovation	Add/ Reno Options		New Construction Options		
		Base Repair	Renovation	AR.1	AR.2	NC.1	NC.2	NC.3
		Code Renovation		L - Shaped	Lightwell	Courtyard	Linear	Wings
Construction Durations		multiple years		3+ years	4 years	2+ years	2+ years	2+ years
1	Ed Plan Accommodation Compliance w/ Vision	Doesn't address any educational deficiencies	Not Feasible - Existing building cannot meet the Space Needs for Target Enrollment	Addresses most Space Needs Lacks meaningful integration of academic & CTE spaces	Addresses some Space Needs Gym & Lecture Hall remain underused	Good Ed Plan Conformance	Good Ed Plan Conformance	Best Ed Plan Conformance
2	Project Cost Reimbursable Cost Temporary Costs Long-term Value			Lower initial cost Higher reimbursement rate for renovation High temporary costs	Lower initial cost Higher reimbursement rate for renovation Higher temporary costs Poor long Term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value
3	Disruption Impact on Students Construction Duration Phasing			Phased construction adjacent to occupancy Long construction schedule Multi-phase renovation	Phased construction adjacent to occupancy Long construction schedule Multi-phase renovation	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework
4	Flexibility Community Use Expansion Potential			Some Flexibility Good community use Limited expansion potential	Limited flexibility Limited community use, lack of Auditorium Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential
5	Operating Costs Maintenance			Generally all new finish materials & systems Some existing infrastructure remains Limited building envelope upgrade	Generally all new finish materials & systems Some existing infrastructure remains Limited building envelope upgrade	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6	Site Access Safety & Security Circulation/ Flow			Site circulation similar to existing Potential admin presence at existing public entrance Remains somewhat sprawling	Site circulation similar to existing Unchanged access to public shops Remains somewhat sprawling, disjointed	Site Approach focused on School Dedicated secure access to public shops Compact footprint, central student commons	Site approach along edge of property Dedicated secure access to public shops Long linear corridor	Site Approach focused on School Dedicated secure access to public shops Some dead-end corridors
7	Final Site layout amenities Abutters	Site Impact to		Similar to existing No additional site amenities Minimal new impact to abutters	Similar to existing No additional site amenities Minimal new impact to abutters	Larger footprint in a constrained site Bus access at rear Enclosed outdoor courtyard Playing fields may impact abutters	Building layout follows buildable area Separate Buses and Car drop-offs in front. Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Bus access at rear Patio off of the Commons Playing fields may impact abutters
8	Civic Image / Aesthetics			New "front door" and civic image	Minimal improved image Less opportunity to transform aesthetics	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image
<b>Totals</b>								





Updated:  
8/24/2023

Evaluation Criteria	MSBA Required		Renovation
	Base Repair	Code Renovation	
1 Ed Plan Accommodation Compliance w/ Vision	Code Renovation	multiple years	Renovation
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value	doesn't address any educational deficiencies		Not Feasible - Existing building cannot meet the Space Needs for Target Enrollment
3 Disruption Impact on Students Construction Duration Phasing			
4 Flexibility Community Use Expansion Potential			
5 Operating Costs Maintenance			
6 Site Access Safety & Security Circulation/ Flow			
7 Final Site layout amenities Abutters			
8 Civic Image / Aesthetics			
<b>Totals</b>			

1	positive / most advantageous
2	neutral
3	neutral
4	neutral
5	negative / least advantageous
6	negative / least advantageous

**Evaluation Criteria**

1 Ed Plan Accommodation Compliance w/ Vision

2 Project Cost Reimbursable Cost Temporary Costs Long-term Value

3 Disruption Impact on Students Construction Duration Phasing

4 Flexibility Community Use Expansion Potential

5 Operating Costs Maintenance

6 Site Access Safety & Security Circulation/ Flow

7 Final Site layout amenities Abutters

8 Civic Image / Aesthetics

Construction Duration	New Construction Options		
	NC.1 Courtyard 2+ years	NC.2 Linear 2+ years	NC.3 Wings 2+ years
1 Ed Plan Accommodation Compliance w/ Vision	Good Ed Plan Conformance	Good Ed Plan Conformance	Best Ed Plan Conformance
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value
3 Disruption Impact on Students Construction Duration Phasing	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework
4 Flexibility Community Use Expansion Potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential
5 Operating Costs Maintenance	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6 Site Access Safety & Security Circulation/ Flow	Site Approach focused on School Dedicated secure access to public shops Compact footprint, central student commons	Site approach along edge of property Dedicated secure access to public shops Long linear corridor	Site Approach focused on School Dedicated secure access to public shops Some dead-end corridors
7 Final Site layout amenities Abutters	Larger footprint in a constrained site Bus access at rear Playing fields may impact abutters	Building layout follows buildable area Separate Buses and Car drop-offs in front. Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Bus access at rear off of the Commons Playing fields may impact abutters
8 Civic Image / Aesthetics	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image



# Discussion

Building Committee & School Committee

October 24, 2023



100  
YEARS

DRA



# Thank you!

*Please note:*

Upcoming Community Meetings:

November 9	Marshfield Town Hall	6 pm
December 5	Rockland Senior Center	7 pm
December 14	Whitman Town Hall	7 pm

Building Committee & School Committee

October 24, 2023



100  
YEARS

DRA





**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT  
476 Webster Street, Hanover, MA 02339**

**JOINT MEETING OF  
SOUTH SHORE REGIONAL VOCATIONAL SCHOOL COMMITTEE  
AND  
SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE  
Wednesday, November 15, 2023 – 6:00PM  
Brass Lantern Restaurant**

**AGENDA**

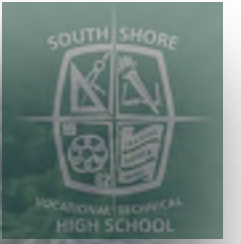
1. **Call to Order of the School Committee and the School Building Committee**
2. **Pledge of Allegiance**
3. **Agenda Items for the School Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Student Recognition – Jack Heywood, Grade 12 Electrical Student from Whitman
  - d. Staff Spotlight – Guidance Department
  - e. Student Advisory – Lily McGann
  - f. Approve Minutes from October 18, 2023 School Committee meeting
  - g. Reports
    - 1) Treasurer
      - a) Monthly Report **(Vote)**
      - b) Stabilization Fund Transfer/MSBA Feasibility **(Vote)**
      - c) Budget Transfer **(Vote)**
      - d) Other Updates
    - 2) Superintendent-Director
      - a) MSBA Update
      - b) Donations **(Vote)**
    - 3) Administrator Reports
  - h. New Business
    - 1) Chapter 74 Plumbing and Veterinary Science Programs in New Building Design **(Vote)**
    - 2) Special Education Parent Advisory Council (SEPAC) Presentation
  - i. Request for Action
  - j. Adjourn School Committee Meeting **(Vote)**
4. **Agenda Items for the School Building Committee**
  - a. Agenda Adjustments
  - b. Approve Minutes from October 23, 2023 and November 1, 2023 School Building Committee meetings **(Vote)**
  - c. Public Comment
  - d. Design Options Discussion Continued
    - 1) Review options constraints and conceptual costs analysis **(Vote)**
    - 2) Design options and/or enrollments **(Vote)**
  - e. Upcoming Meetings/Timeline
  - f. Adjourn School Building Committee meeting **(Vote)**

Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted November 9, 2023*

# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

November 15, 2023



100  
YEARS

DRA



# Agenda



## . **Design Options**

- Review Comparative Conceptual Cost Analysis
- Review Options Constraints
- Review Design Options
- Review Options Priority Matrix
- Possible Vote to eliminate a number of design options and/or design enrollments from consideration



# Preliminary Options - Areas

Option	645 students	750 students	805 students	900 students	975 students
Addition/ Renovation AR- 1 “L-shape”	201,500 sf	217,500 sf	230,400 sf	243,200 sf	254,500 sf
Addition/ Renovation AR- 2 “Lightwell”	188,100 sf	201,700 sf	209,600 sf	228,500 sf	236,100 sf
New Construction NC-1 “Courtyard”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-2 “Linear”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-2.1 “Linear/Center core”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-3 “Wings”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf



Student Enrollment Range: 645 - 975 Students	805 Students		900 Students		975 Students	
	New* (all 3 options)	Add/Rene AK1 L Shape	New* (all 3 options)	Add/Rene AK1 L Shape	New* (all 3 options)	
<b>TOTAL ESTIMATED PROJECT COSTS</b>	\$ 344,190,750	\$ 345,805,000	\$ 367,913,625	\$ 366,758,125	\$ 389,362,000	
Cost/Student	\$ 427,566	\$ 434,540	\$ 408,793	\$ 407,509	\$ 399,346	
<b>Estimated MSBA Participation Range***</b>	32.4%	32.5%	30.8%	32.5%	31.1%	
	\$ 304,633,988.00	\$ 306,690,525.00	\$ 113,317,396.50	\$ 111,861,328.13	\$ 121,091,582.00	
<b>Estimated District Share Range***</b>	68.6%	68.5%	69.2%	68.5%	68.9%	
	\$ 239,556,762.00	\$ 243,114,475.00	\$ 254,596,228.50	\$ 254,896,896.88	\$ 268,270,418.00	
<b>Estimated Share By District****</b>						
Abington	16.76%	\$ 40,005,979.25	\$ 40,600,117.33	\$ 42,517,570.16	\$ 42,567,781.78	\$ 44,801,159.81
Cohasset	1.49%	\$ 3,569,395.75	\$ 3,622,405.68	\$ 3,793,483.80	\$ 3,797,963.76	\$ 3,997,229.23
Hanover	11.06%	\$ 26,434,977.88	\$ 26,888,460.94	\$ 28,158,342.87	\$ 28,131,596.79	\$ 29,670,708.23
Hanson	13.01%	\$ 31,214,246.09	\$ 31,677,816.09	\$ 33,173,888.57	\$ 33,213,065.66	\$ 34,955,635.47
Norwell	4.10%	\$ 9,821,827.24	\$ 9,967,693.48	\$ 10,438,445.37	\$ 10,450,772.77	\$ 10,999,067.34
Reckland	21.77%	\$ 54,547,074.71	\$ 55,357,165.96	\$ 57,971,561.23	\$ 58,040,023.42	\$ 61,065,174.38
Schuette	6.60%	\$ 15,810,746.29	\$ 16,045,555.35	\$ 16,803,351.08	\$ 16,823,195.19	\$ 17,706,847.59
Whitman	24.15%	\$ 58,092,514.79	\$ 58,955,200.19	\$ 61,739,585.41	\$ 61,812,497.49	\$ 65,055,576.37

\*Costs are the same across all New Construction Options for each enrollment - shown as a single cost for simplicity.

\*\*Costs based on CM at-Risk delivery method for simplicity.

\*\*\*Estimated MSBA Participation and District Share Ranges calculated without MSBA input. This range likely to change by the time the project finishes Schematic Design.

\*\*\*\*Based on October 1, 2023 reporting numbers.

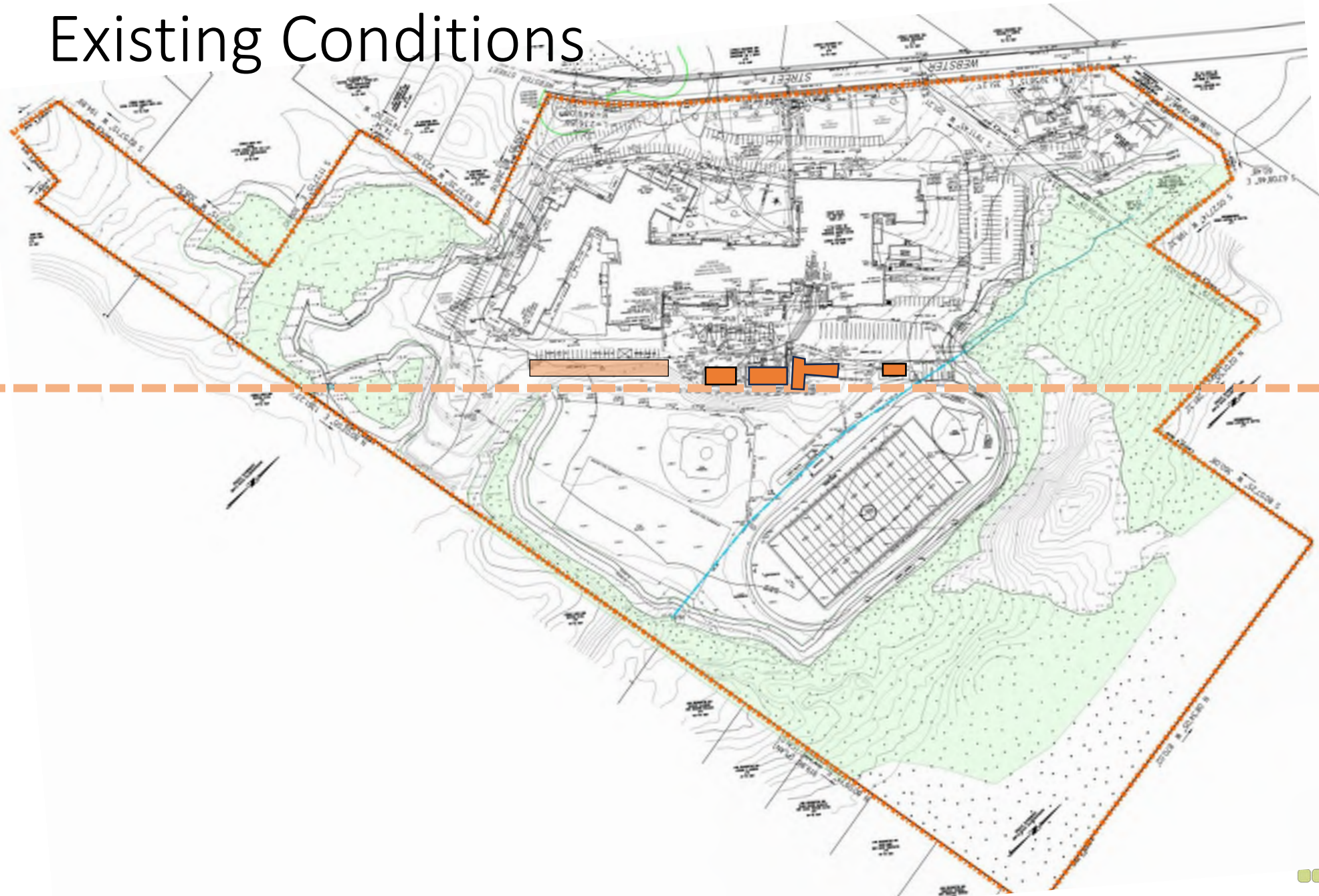
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# Existing Conditions





# Existing Conditions



# Status Updates

## Site Development Requirements

### Key issues

- Vehicular Circulation, Bus & Car Access
- Parking requirements
- Athletic Fields & support spaces
- Outdoor Learning opportunities
- Utilities
- Outbuildings
- Adjacent Property

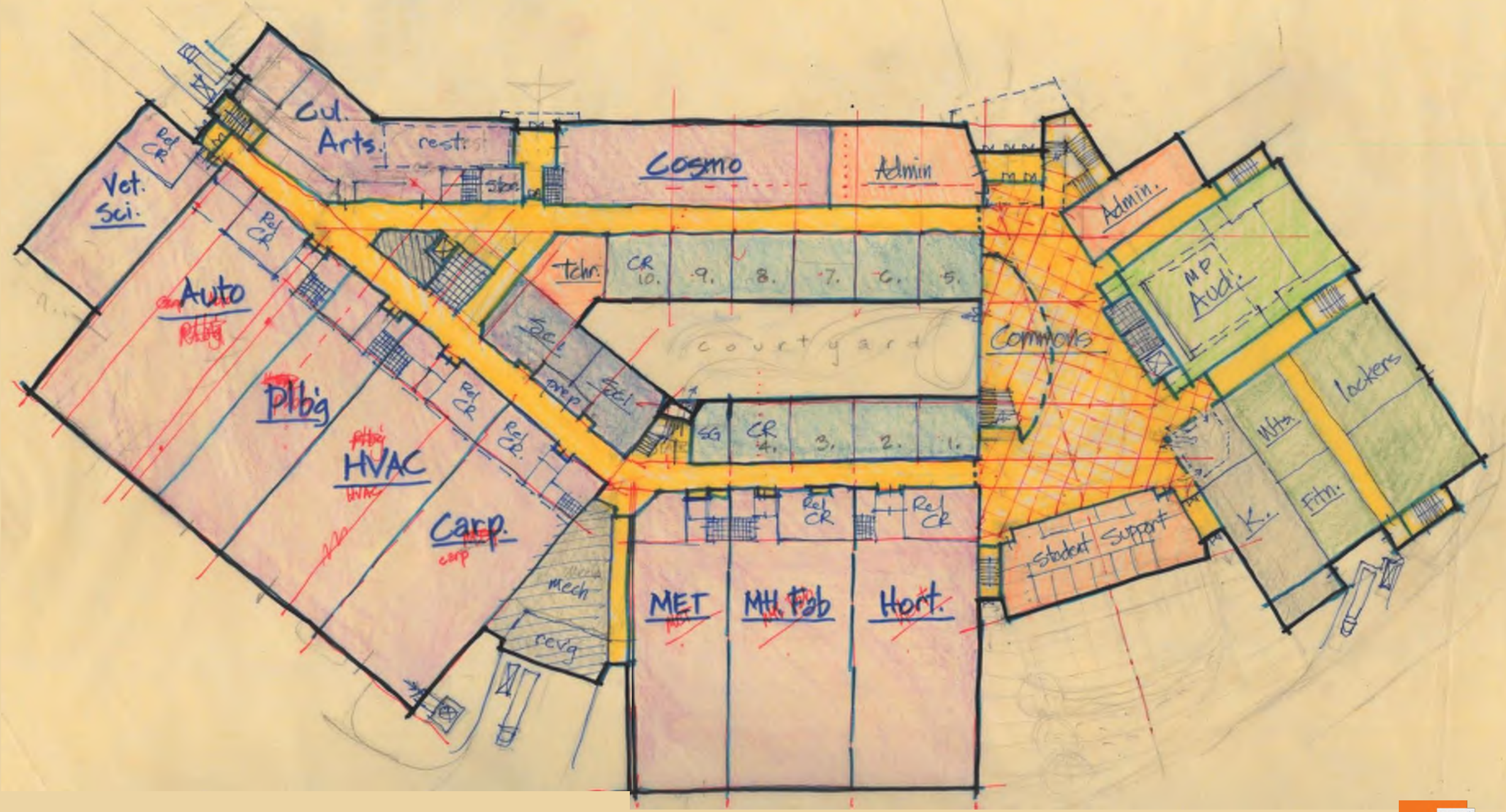
	existing	750	805	900	975
Enrollments:	645	750	805	900	975
Staff: (Admin & Teachers):	130	150	160	175	185
Approx. 2/3 of seniors:	108	125	134	150	163
Approx. 1/3 of juniors:	53	61	66	74	80
Visitors:	20	23	24	27	29
<b>TOTAL Parking Spaces:</b>	<b>311</b>	<b>359</b>	<b>384</b>	<b>426</b>	<b>457</b>
<i>Bus parking (one bus = 4 cars)</i>	<i>12</i>	<i>14</i>	<i>15</i>	<i>17</i>	<i>19</i>



# Preliminary Options

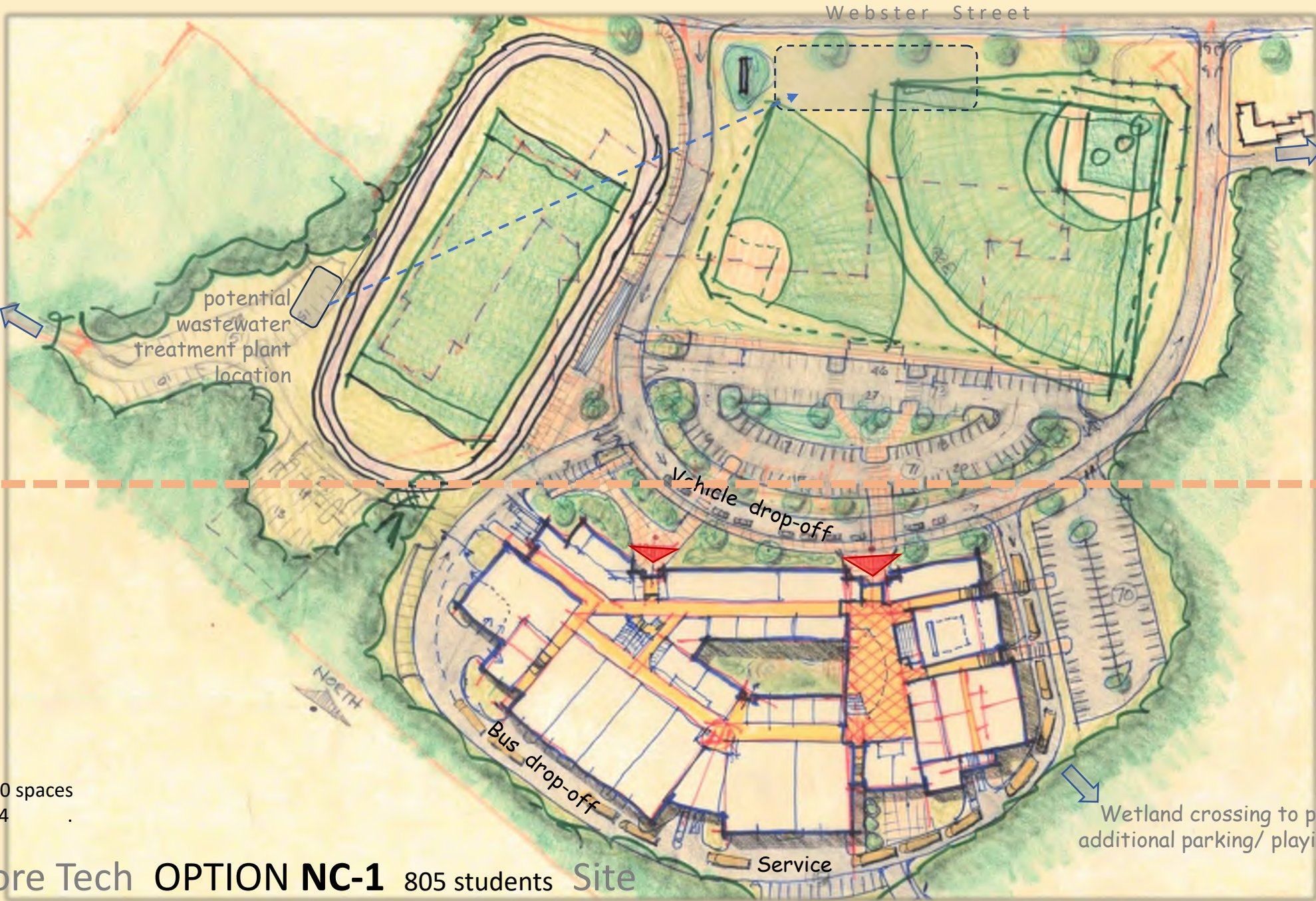
## New Construction Options

- NC-1 “Courtyard”
- NC-2 “Linear”
- NC-2.1 “Linear/ Center core”
- NC-3 “Wings”



South Shore Tech OPTION NC-1 1<sup>st</sup> Floor





Preliminary  
 Parking shown: 250 spaces  
 Target: 384

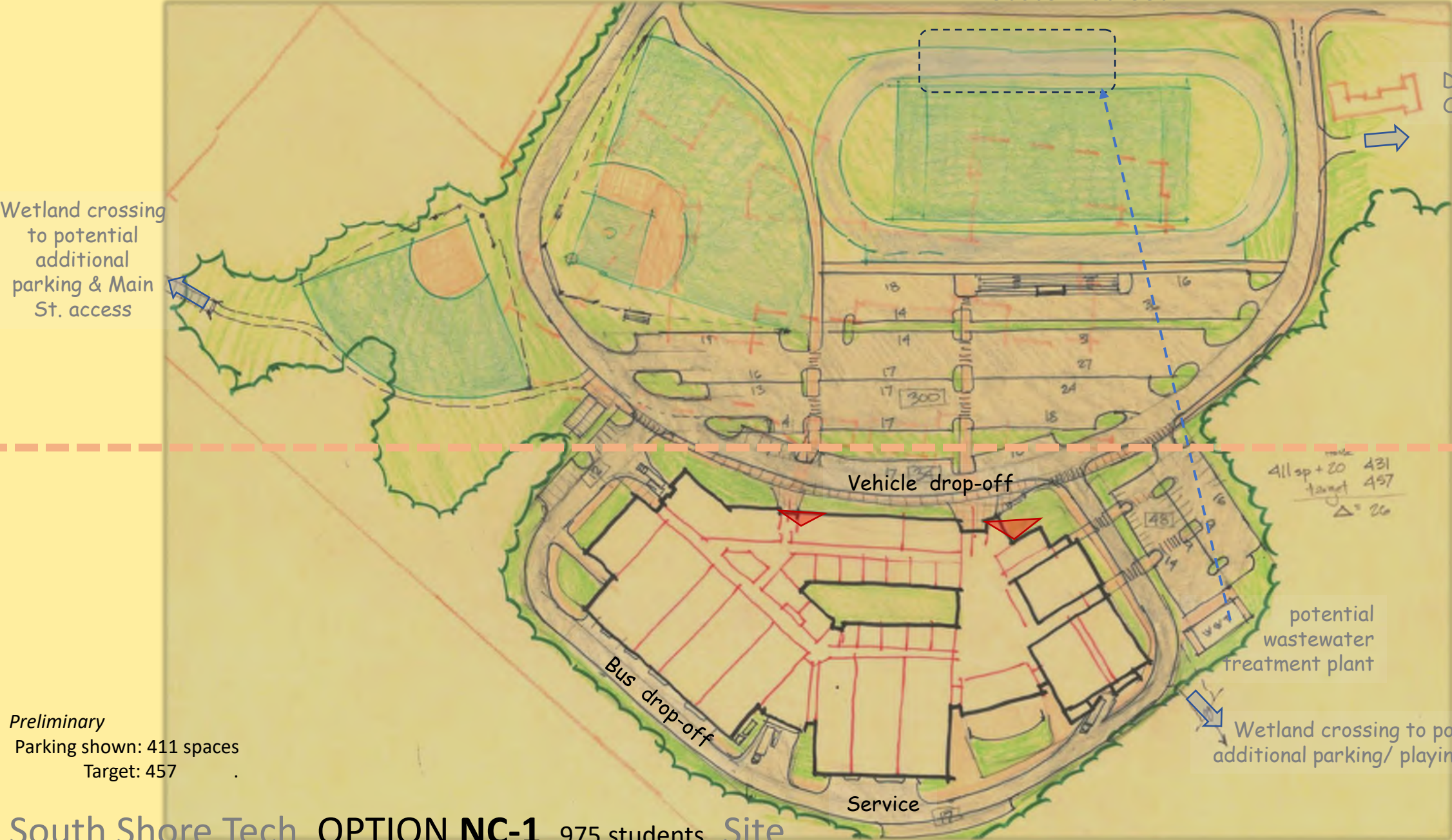
South Shore Tech **OPTION NC-1** 805 students Site



Webster Street

District Offices

Wetland crossing to potential additional parking & Main St. access



411 sp + 20 431  
 target 457  
 $\Delta = 26$

potential wastewater treatment plant

Wetland crossing to potential additional parking/ playing field??

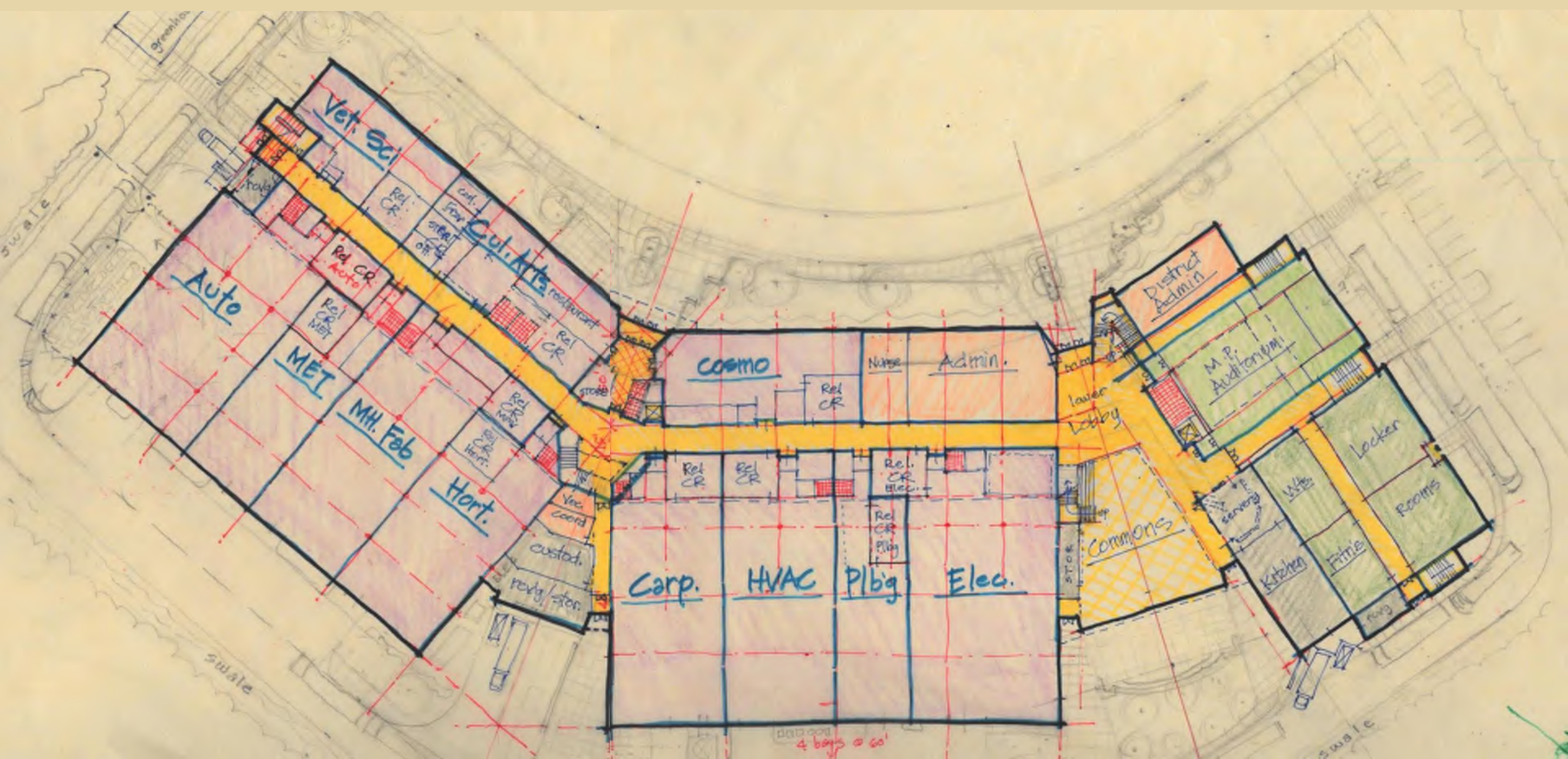
Preliminary  
 Parking shown: 411 spaces  
 Target: 457

# South Shore Tech OPTION NC-1 975 students Site



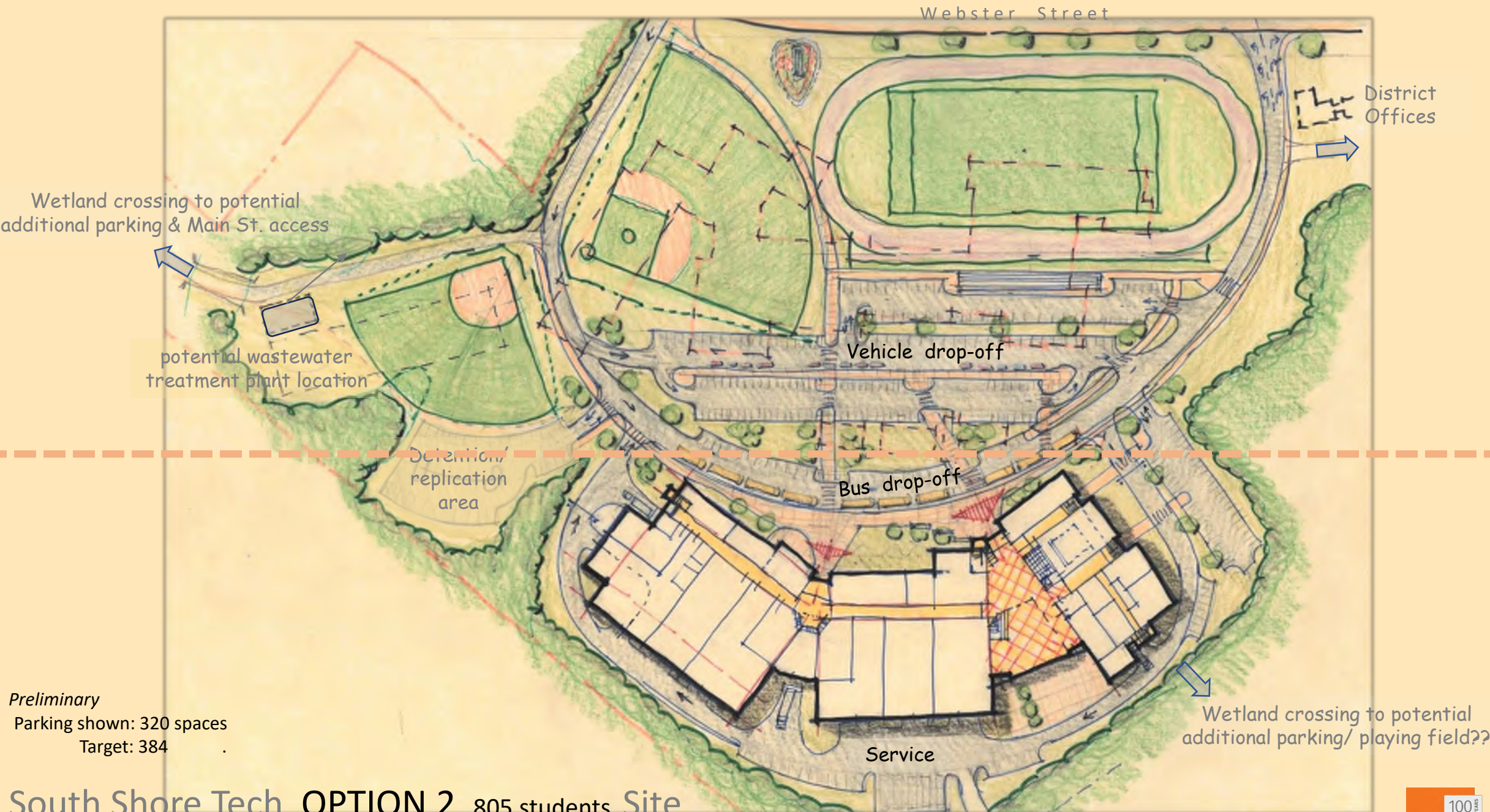






South Shore Tech OPTION NC-2 1<sup>st</sup> Floor





Wetland crossing to potential additional parking & Main St. access

potential wastewater treatment plant location

Detention/replication area

Vehicle drop-off

Bus drop-off

Service

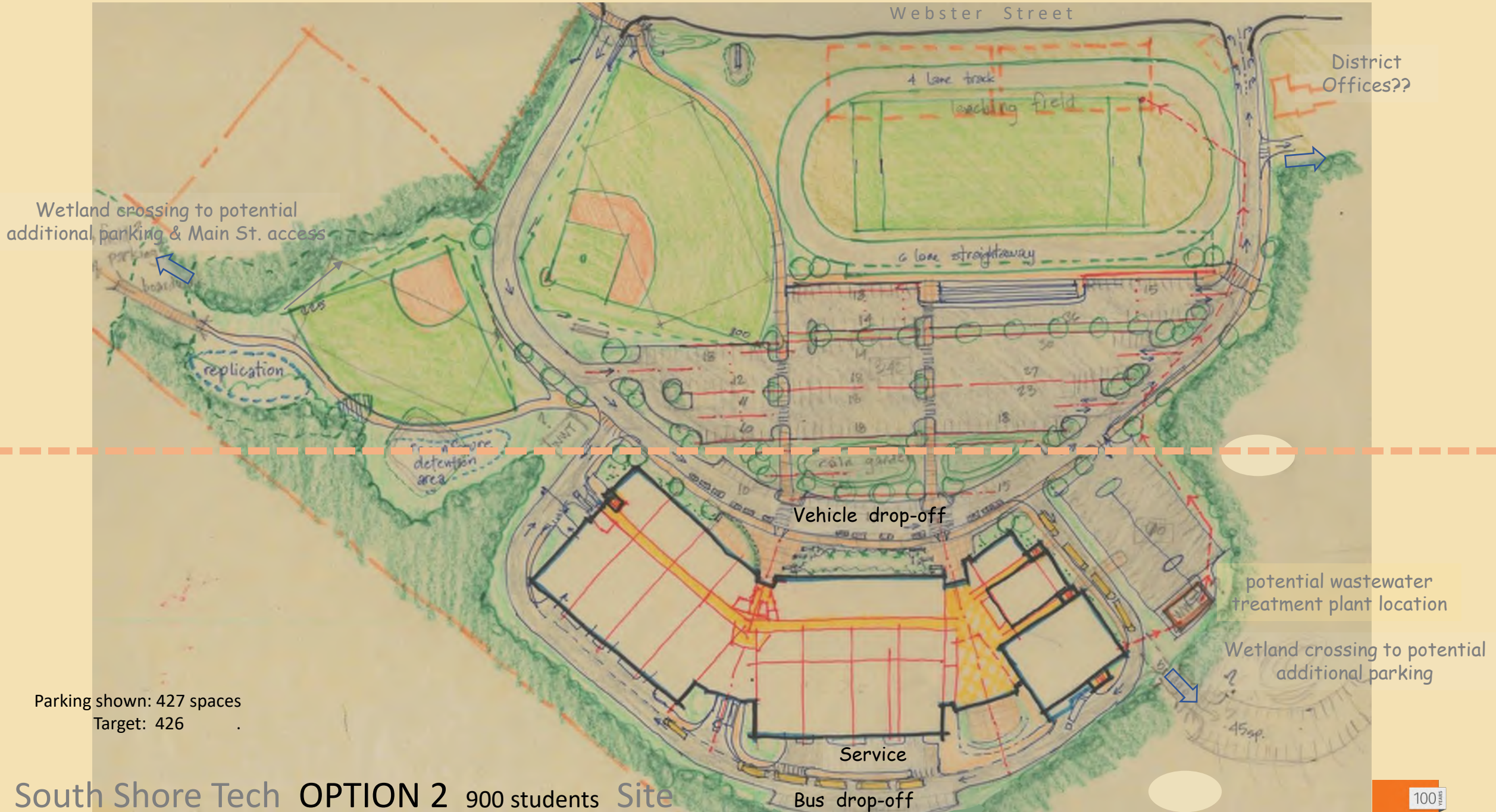
District Offices

Wetland crossing to potential additional parking/ playing field??

Preliminary  
 Parking shown: 320 spaces  
 Target: 384

South Shore Tech OPTION 2 805 students Site





South Shore Tech **OPTION 2** 900 students **Site**



Webster Street

District Offices??

Wetland crossing to potential additional parking & Main St. access

potential wastewater treatment plant location

Wetland crossing to potential additional parking

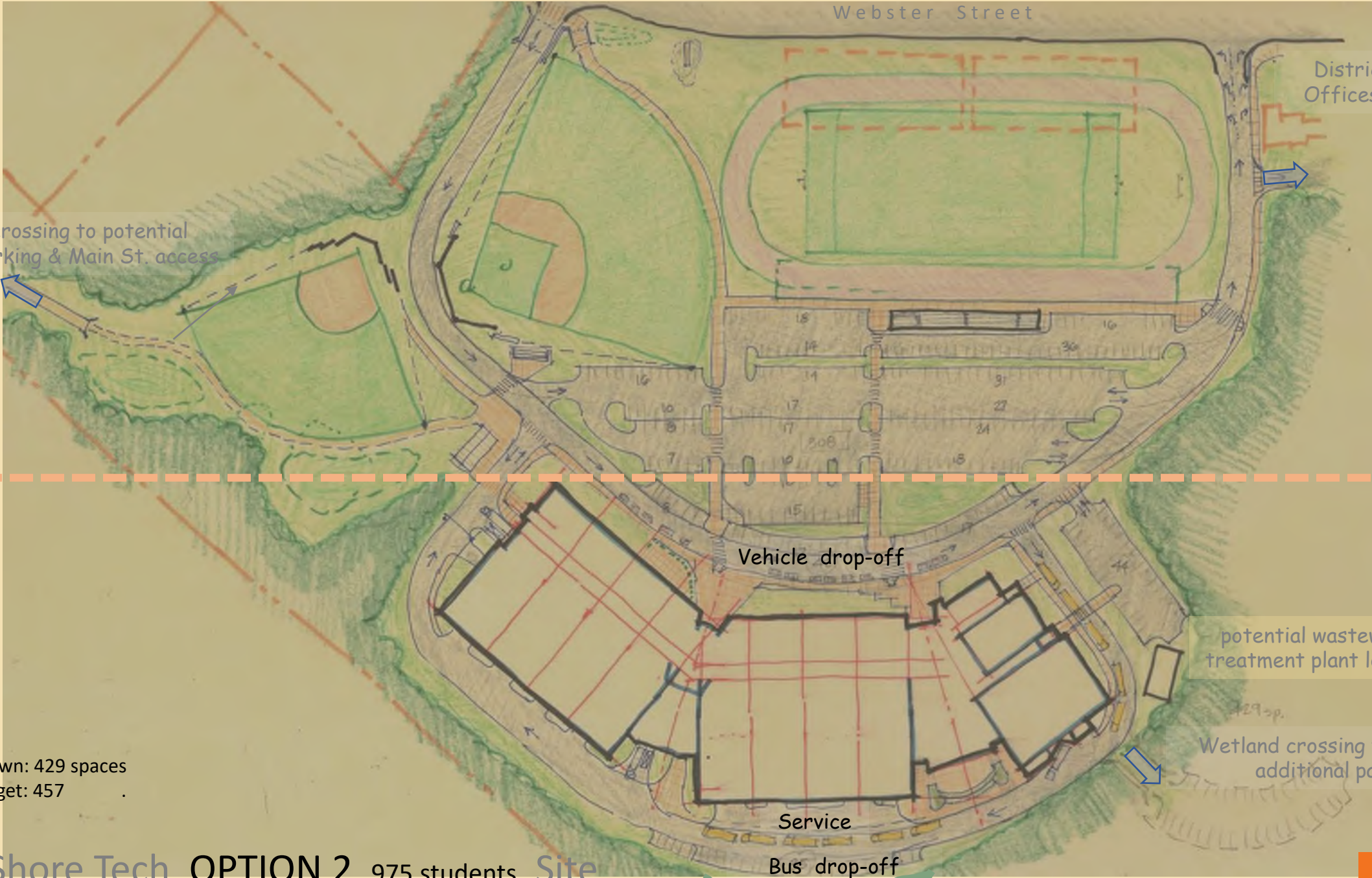
Parking shown: 429 spaces  
Target: 457

Vehicle drop-off

Service

Bus drop-off

# South Shore Tech OPTION 2 975 students Site



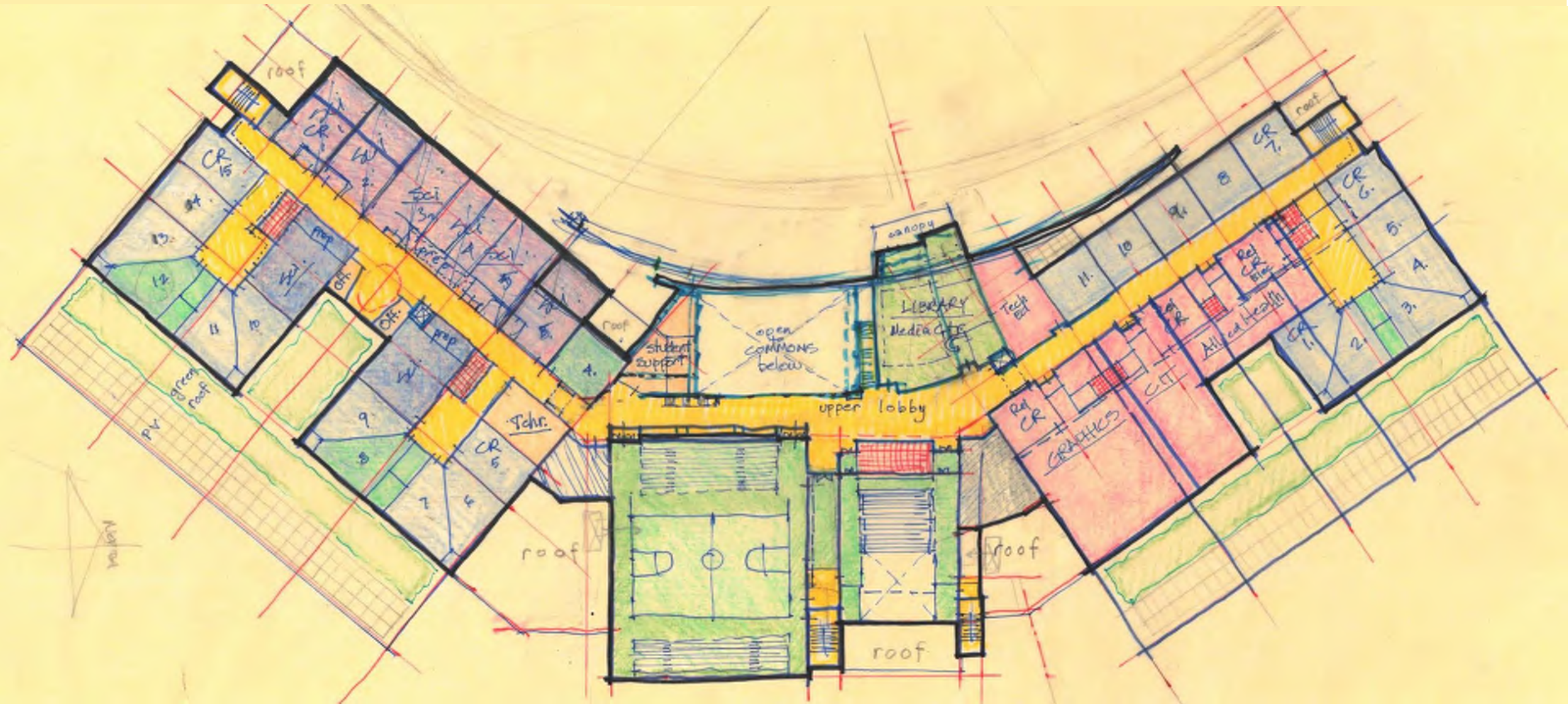






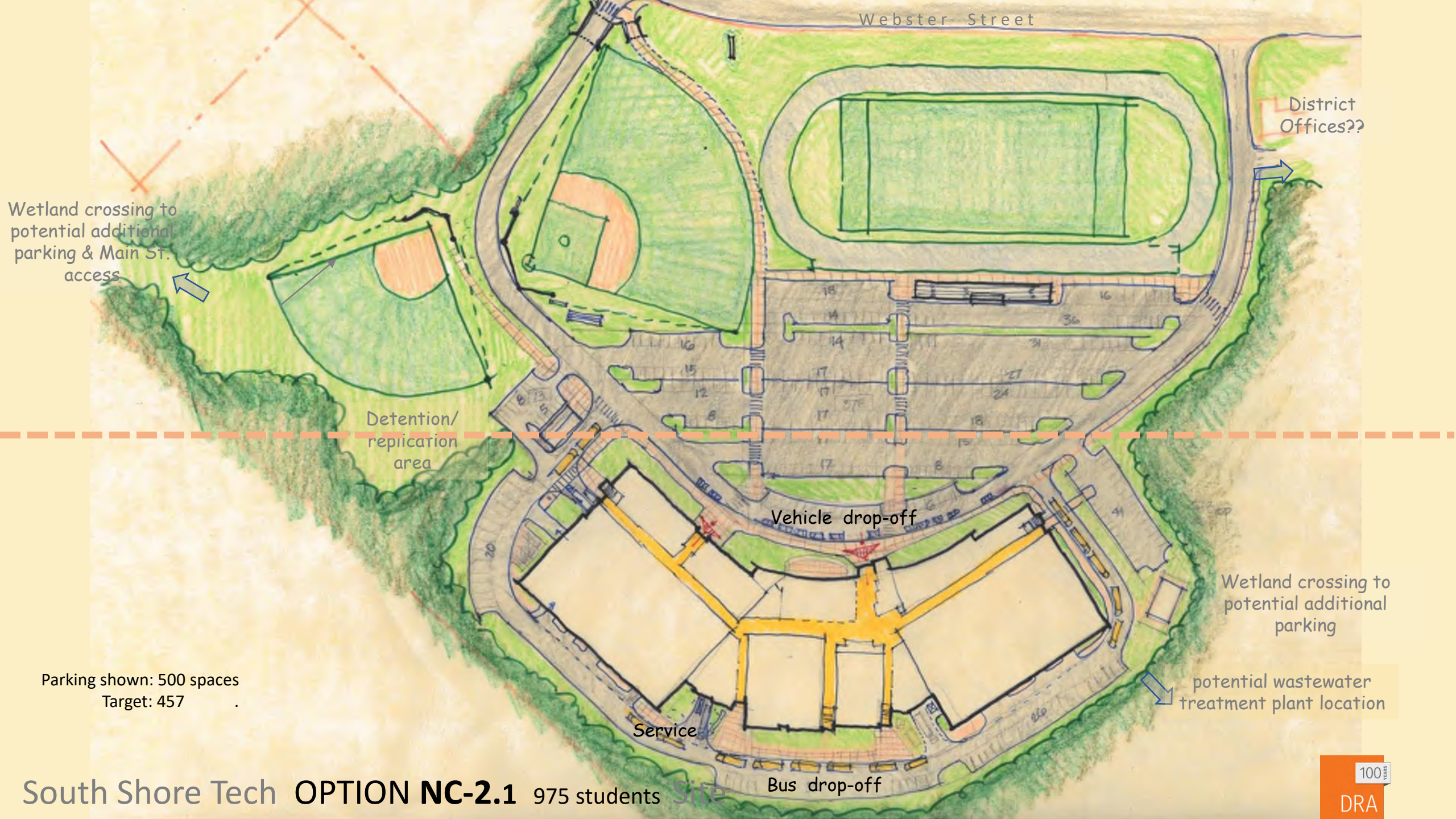






South Shore Tech **OPTION NC-2.1** 2<sup>nd</sup> Floor





Webster Street

District Offices??

Wetland crossing to potential additional parking & Main St. access

Detention/replication area

Vehicle drop-off

Wetland crossing to potential additional parking

potential wastewater treatment plant location

Parking shown: 500 spaces  
Target: 457

Service

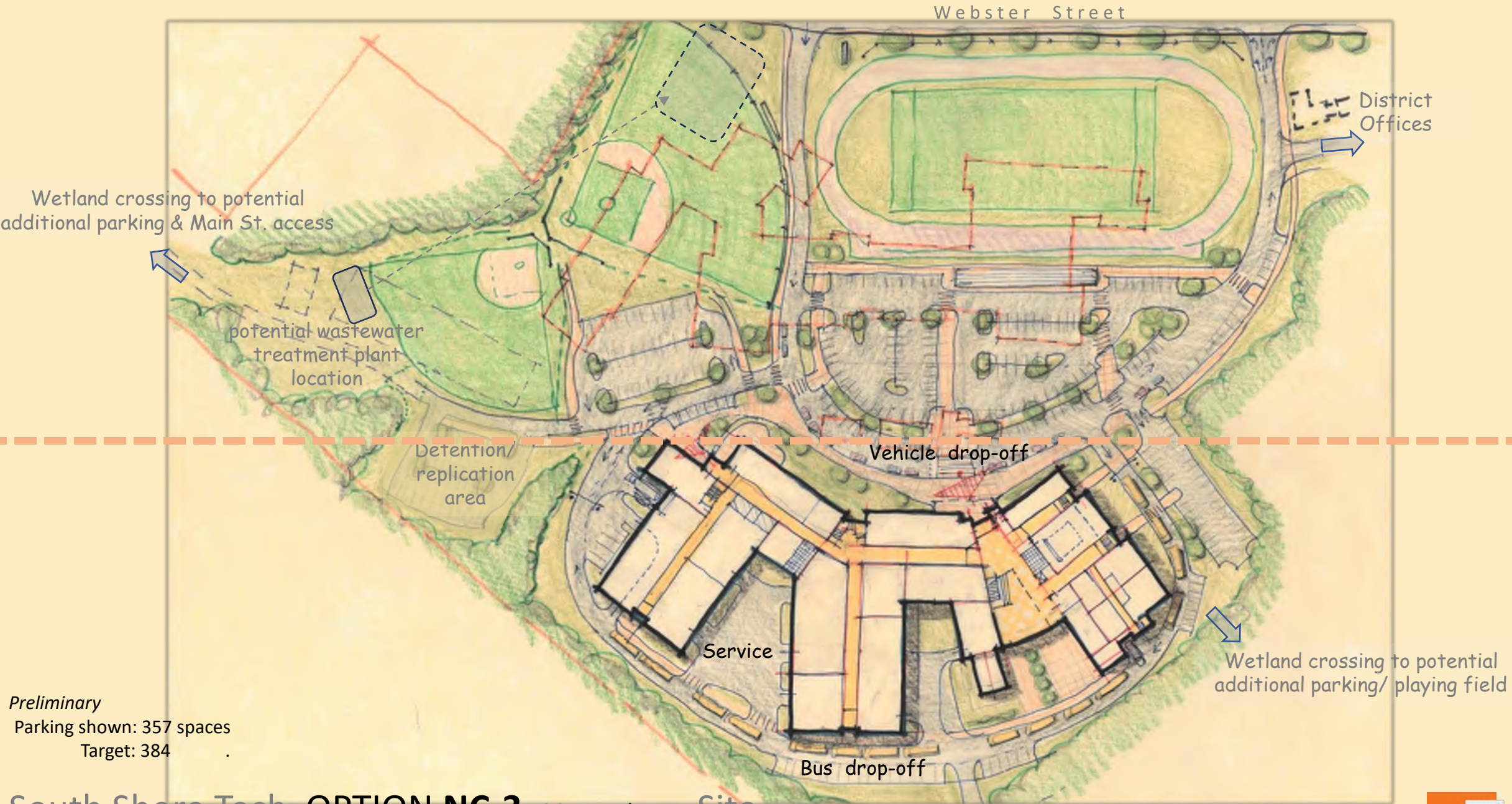
Bus drop-off





South Shore Tech **OPTION NC-3** 1<sup>st</sup> Floor





Preliminary  
 Parking shown: 357 spaces  
 Target: 384

South Shore Tech **OPTION NC-3** 805 students Site



Webster Street

District Offices

Wetland crossing to potential additional parking & Main St. access

Detention/replication area

Vehicle drop-off

potential wastewater treatment plant location

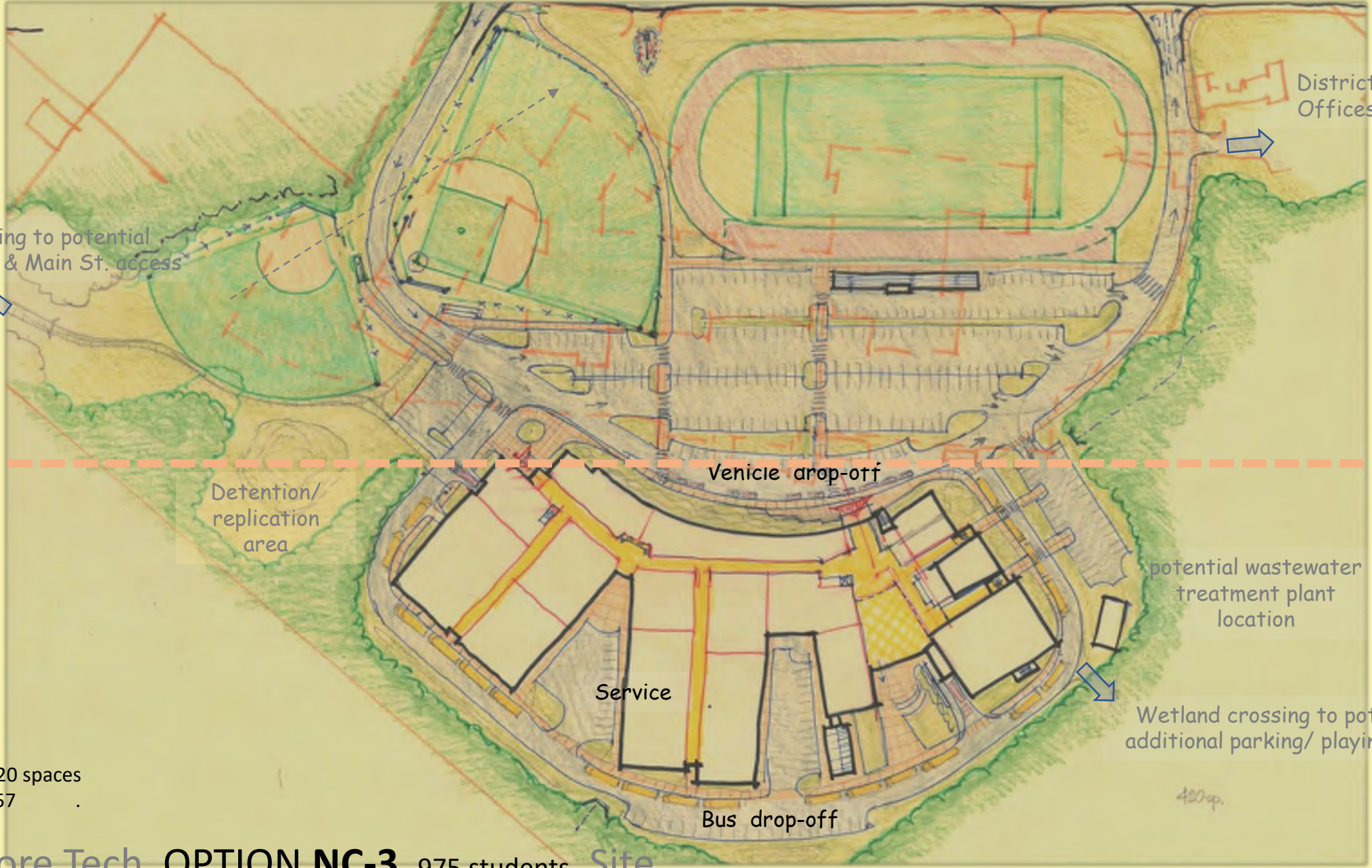
Service

Wetland crossing to potential additional parking/ playing field

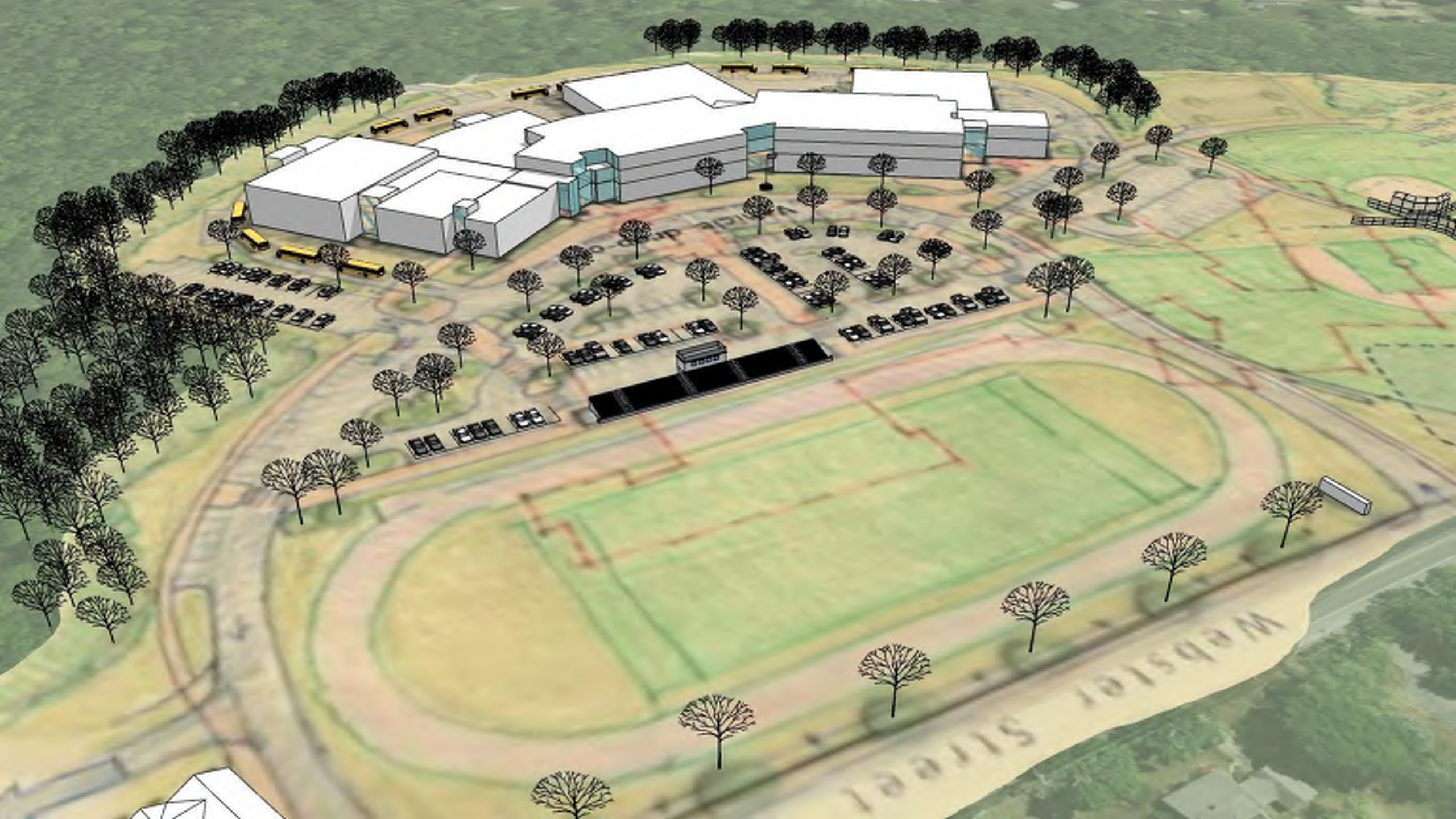
Bus drop-off

Preliminary  
Parking shown: 420 spaces  
Target: 457

# South Shore Tech OPTION NC-3 975 students Site











View from Webster Street



# Preliminary Options



## Addition / Renovation Options

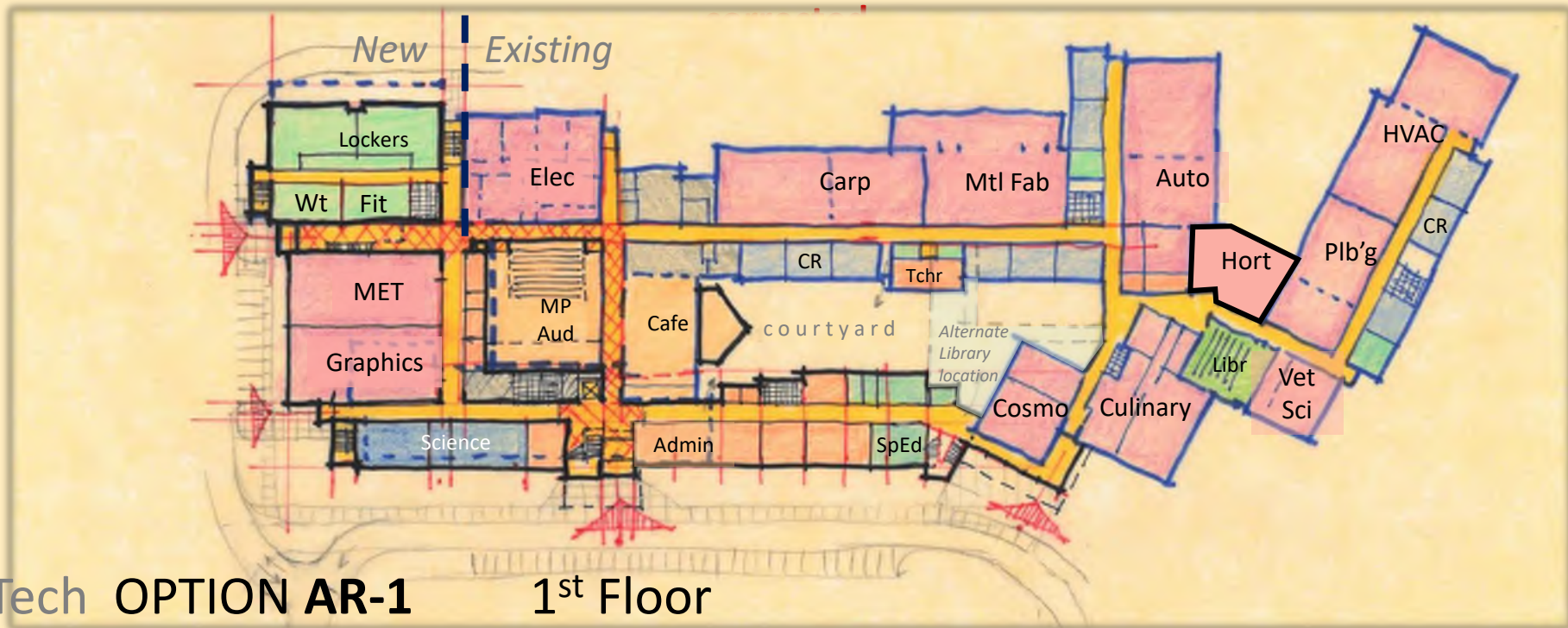
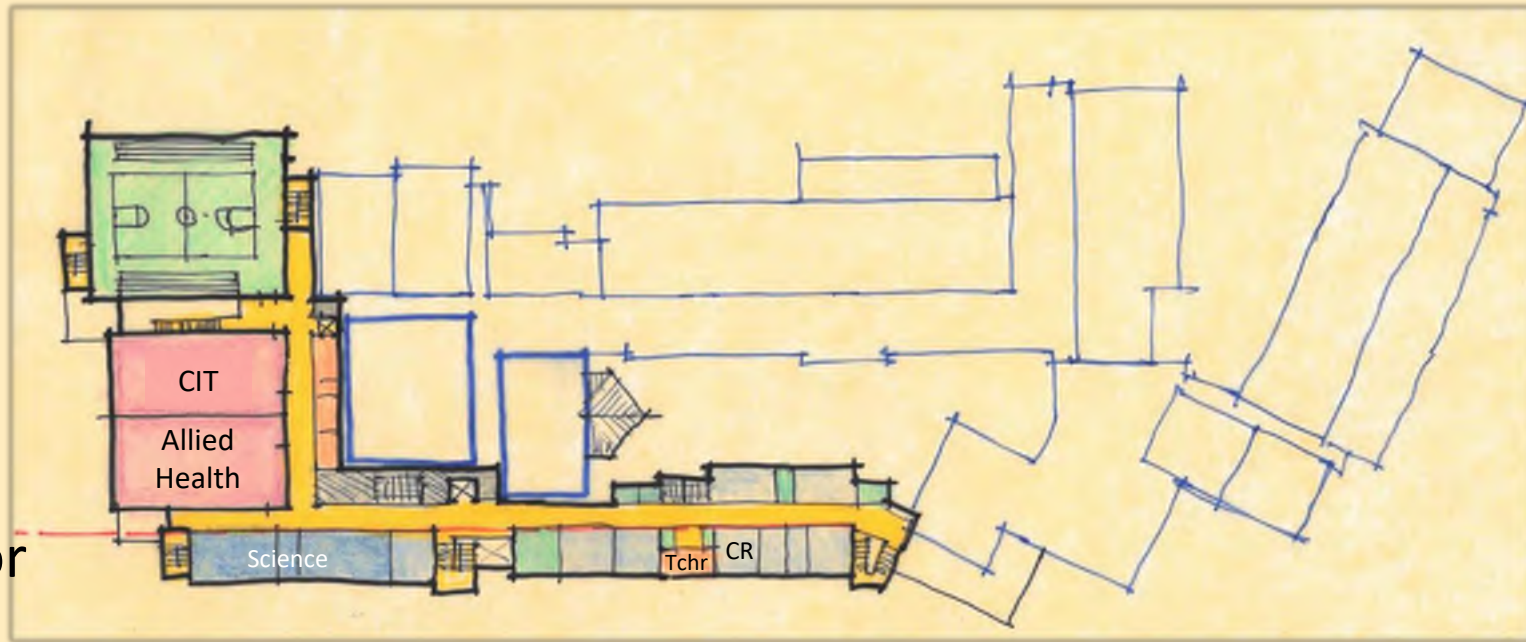
- AR-1 “L-Shaped”



Addition/Renovation Option



2<sup>nd</sup> Floor



1<sup>st</sup> Floor

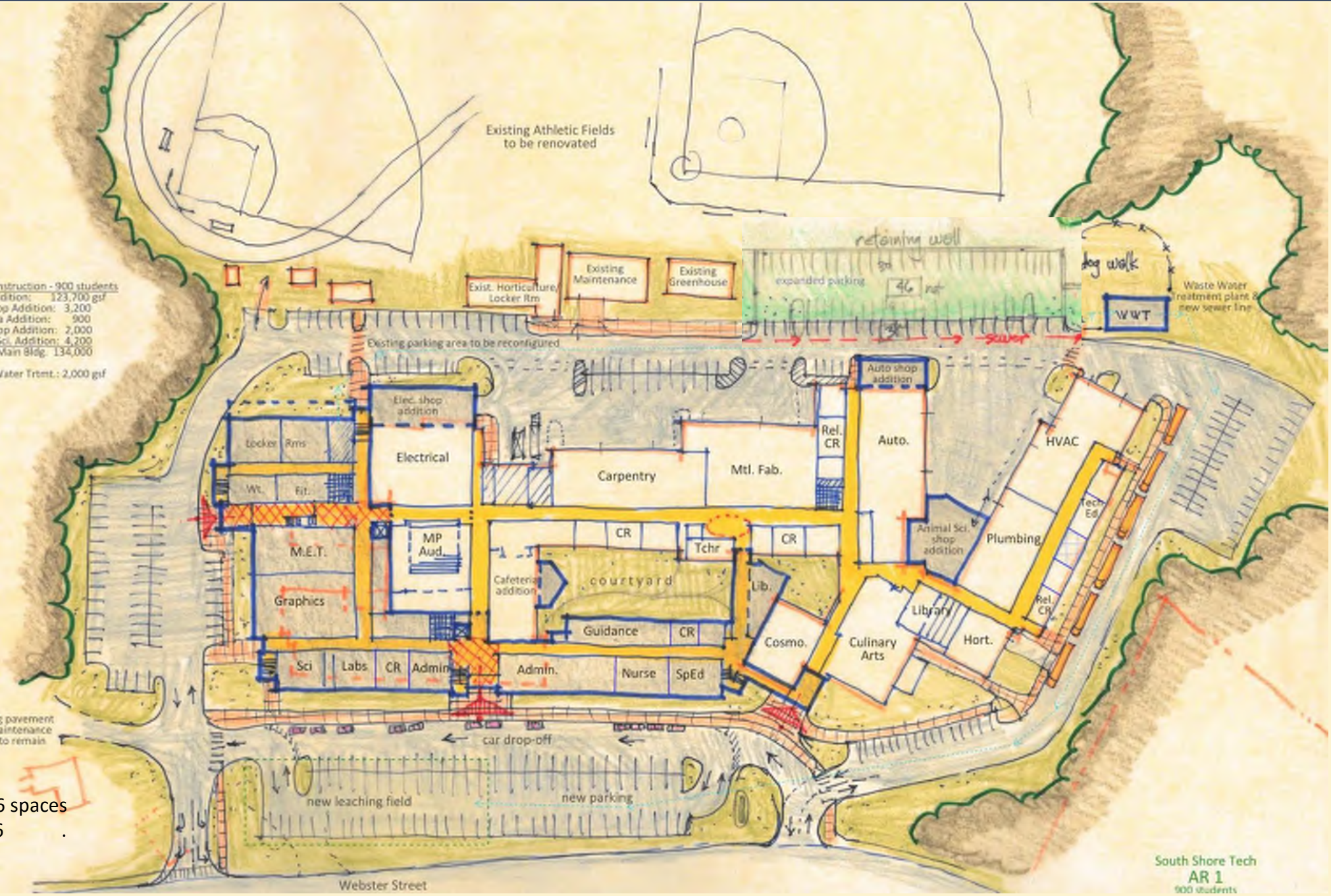




OPTION AR 1



New Construction - 900 students  
 Main Addition: 123,700 sq ft  
 Lec. Shop Addition: 3,200  
 Cafeteria Addition: 900  
 Auto Shop Addition: 2,000  
 Animal Sci. Addition: 4,200  
 TOTAL Main Bldg: 134,000  
 Waste Water Trmt.: 2,000 gpf



Preliminary  
 Parking shown: 356 spaces  
 Target: 426

South Shore Tech  
 AR 1  
 900 students

South Shore Tech **OPTION AR-1** 900 students Site Plan

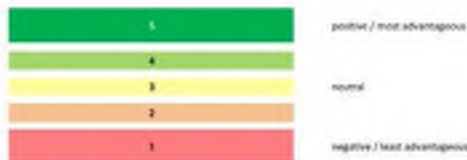


Preliminary Evaluation Matrix - South Shore Tech - Concept Options - **WORKING DRAFT**



Updated:  
9/14/2023

Evaluation Criteria		Concept Options						
		MSBA Required	Renovation	Add/ Reno Options		New Construction Options		
		Base Repair	Renovation	AR.1	AR.2	NC.1	NC.2	NC.3
		Code Renovation		L - Shaped	Lightwell	Courtyard	Linear	Wings
Construction Durations		multiple years		3+ years	4 years	2+ years	2+ years	2+ years
1	Ed Plan Accommodation Compliance w/ Vision	doesn't address any educational deficiencies	Not Possible - Existing building cannot meet the Space Needs for Target Enrollment	Adds most Space Needs Lacks meaningful integration of academic & CTL spaces	Adds some Space Needs Gym & Lecture Hall remain underused	Good Ed Plan conformance	Good Ed Plan Conformance	Best Ed Plan Conformance
2	Project Cost Reimbursable Cost Temporary Costs Long-term Value			Lower initial cost Higher reimbursement rate for renovation High temporary costs.	Lower initial cost Higher reimbursement rate for renovation Higher temporary costs Long Term Value Poor	Higher initial Construction Cost Good Long-Term Value	Higher initial Construction Cost Good Long-Term Value	Higher initial Construction Cost Good Long-Term Value
3	Disruption Impact on Students Construction Duration Phasing			Phased construction adjacent to occupancy Long construction schedule Multi-phase renovation	Phased construction adjacent to occupancy Long construction schedule Multi-phase renovation	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration
4	Flexibility Community Use Expansion Potential			Some Flexibility Good community use Limited expansion potential	Limited flexibility Limited community use, lack of Auditorium Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential
5	Operating Costs Maintenance			Generally all new finish materials & systems Some existing infrastructure remains Limited building envelope upgrade	Generally all new finish materials & systems Some existing infrastructure remains Limited building envelope upgrade	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6	Site Access Safety & Security Circulation/ Flow			Site circulation similar to existing Potential admin presence at existing public entrance Remains somewhat sprawling	Site circulation similar to existing Unchanged access to public shops Remains somewhat sprawling, disjointed	Site Approach focused on School Dedicated secure access to public shops Compact footprint, central student commons	Site approach along edge of property Dedicated secure access to public shops Long linear corridor	Site Approach focused on School Dedicated secure access to public shops Some dead-end corridors
7	Final Site layout amenities Abutters			Similar to existing No additional site amenities Minimal new impact to abutters	Similar to existing No additional site amenities Minimal new impact to abutters	Larger footprint in a constrained site Bus access at rear Enclosed outdoor courtyard Playing fields may impact abutters	Building layout follows buildable area Separate Buses and Car drop-offs in front. Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Bus access at rear off of the Commons Patio Playing fields may impact abutters
8	Civic Image / Aesthetics			New "front door" and civic image	Minimal improved image Less opportunity to transform aesthetics	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image
<b>Totals</b>								





Updated:  
9/14/2023

Evaluation Criteria	MSBA Required	Renovation
	Base Repair	Renovation
Construction Duration:	Code Renovation	
	multiple years	
1 Ed Plan Accommodation Compliance w/ Vision	doesn't address any educational deficiencies	Not Possible - Existing building cannot meet the Space Needs for Target Enrollment
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value		
3 Disruption Impact on Students Construction Duration Phasing		
4 Flexibility Community Use Expansion Potential		
5 Operating Costs Maintenance		
6 Site Access Safety & Security Circulation/ Flow		
7 Final Site layout amenities Abutters	Site Impact to	
8 Civic Image / Aesthetics		
<b>Totals</b>		

5	positive / most advantageous
4	
3	neutral
2	
1	negative / least advantageous

**Evaluation Criteria**

**Construction Duration:**

1 Ed Plan Accommodation Compliance w/ Vision

2 Project Cost Reimbursable Cost Temporary Costs Long-term Value

3 Disruption Impact on Students Construction Duration Phasing

4 Flexibility Community Use Expansion Potential

5 Operating Costs Maintenance

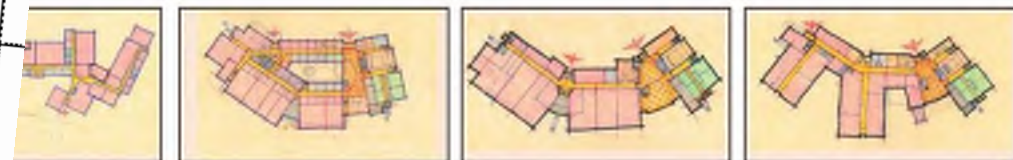
6 Site Access Safety & Security Circulation/ Flow

7 Final Site layout amenities Abutters

8 Civic Image / Aesthetics

Site Impact to

Evaluation Criteria	New Construction Options		
	NC.1 Courtyard 2+ years	NC.2 Linear 2+ years	NC.3 Wings 2+ years
1 Ed Plan Accommodation Compliance w/ Vision	Good Ed Plan conformance	Good Ed Plan Conformance	Best Ed Plan Conformance
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value
3 Disruption Impact on Students Construction Duration Phasing	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework
4 Flexibility Community Use Expansion Potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential
5 Operating Costs Maintenance	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6 Site Access Safety & Security Circulation/ Flow	Site Approach focused on School Dedicated secure access to public shops Compact footprint, central student commons	Site approach along edge of property Dedicated secure access to public shops Long linear corridor	Site Approach focused on School Dedicated secure access to public shops Some dead-end corridors
7 Final Site layout amenities Abutters	Larger footprint in a constrained site Bus access at rear Playing fields may impact abutters	Building layout follows buildable area Separate Buses and Car drop-offs in front. Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Bus access at rear off of the Commons Playing fields may impact abutters
8 Civic Image / Aesthetics	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image



# Discussion

School Building Committee

November 2, 2023



100  
YEARS

DRA



# Thank you!

*Please note:*

Upcoming Community Meetings:

November 9	Marshfield Town Hall	6 pm
December 5	Rockland Senior Center	7 pm
December 14	Whitman Town Hall	7 pm

School Building Committee

November 2, 2023





**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT  
476 Webster Street, Hanover, MA 02339**

**JOINT MEETING OF  
SOUTH SHORE REGIONAL VOCATIONAL SCHOOL COMMITTEE  
AND  
SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE**

**Thursday, November 30, 2023 – 5:00PM  
Brass Lantern Restaurant**

**AGENDA (*Revised*)**

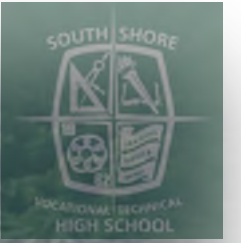
1. **Call to Order of the School Committee and the School Building Committee**
2. **Pledge of Allegiance**
3. **Agenda Items for School Committee**
  - a. **Agenda Adjustments**
  - b. **Public Comment**
  - c. Appointment of Norwell Representative Dustin Reardon to the School Building Committee (**Vote**)
  - d. Adjourn School Committee Meeting (**Vote**)
4. **Agenda Items for the School Building Committee**
  - a. **Agenda Adjustments**
  - b. **Public Comment**
  - c. Construction Delivery Method (Design/Bid/Build or Construction Manager at Risk)
  - d. Site Design Update
  - e. Main Entrance Design
  - f. Building Massing/3-D Views
  - e. Adjourn School Building Committee meeting (**Vote**)

Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted November 29, 2023*

# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

November 30, 2023



100  
YEARS

DRA



# Agenda



- **Design Options**

- Review Site Constraints
- Review Floor Plan Design
- Review Options Priority Matrix

- **Building Delivery Options**

- Construction Management at Risk (CMR)
- Design-Bid-Build (DBB)



# Preliminary Options - Areas

Option	645 students	750 students	805 students	900 students	975 students
Addition/ Renovation AR- 1 “L-shape”	201,500 sf	217,500 sf	230,400 sf	243,200 sf	254,500 sf
Addition/ Renovation AR- 2 “Lightwell”	188,100 sf	201,700 sf	209,600 sf	228,500 sf	236,100 sf
New Construction NC-1 “Courtyard”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-2.0 “Linear”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-2.1 “Linear/Center core”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf
New Construction NC-3 “Wings”	203,480 sf	228,540 sf	240,000 sf	260,000 sf	278,000 sf



# Status Updates

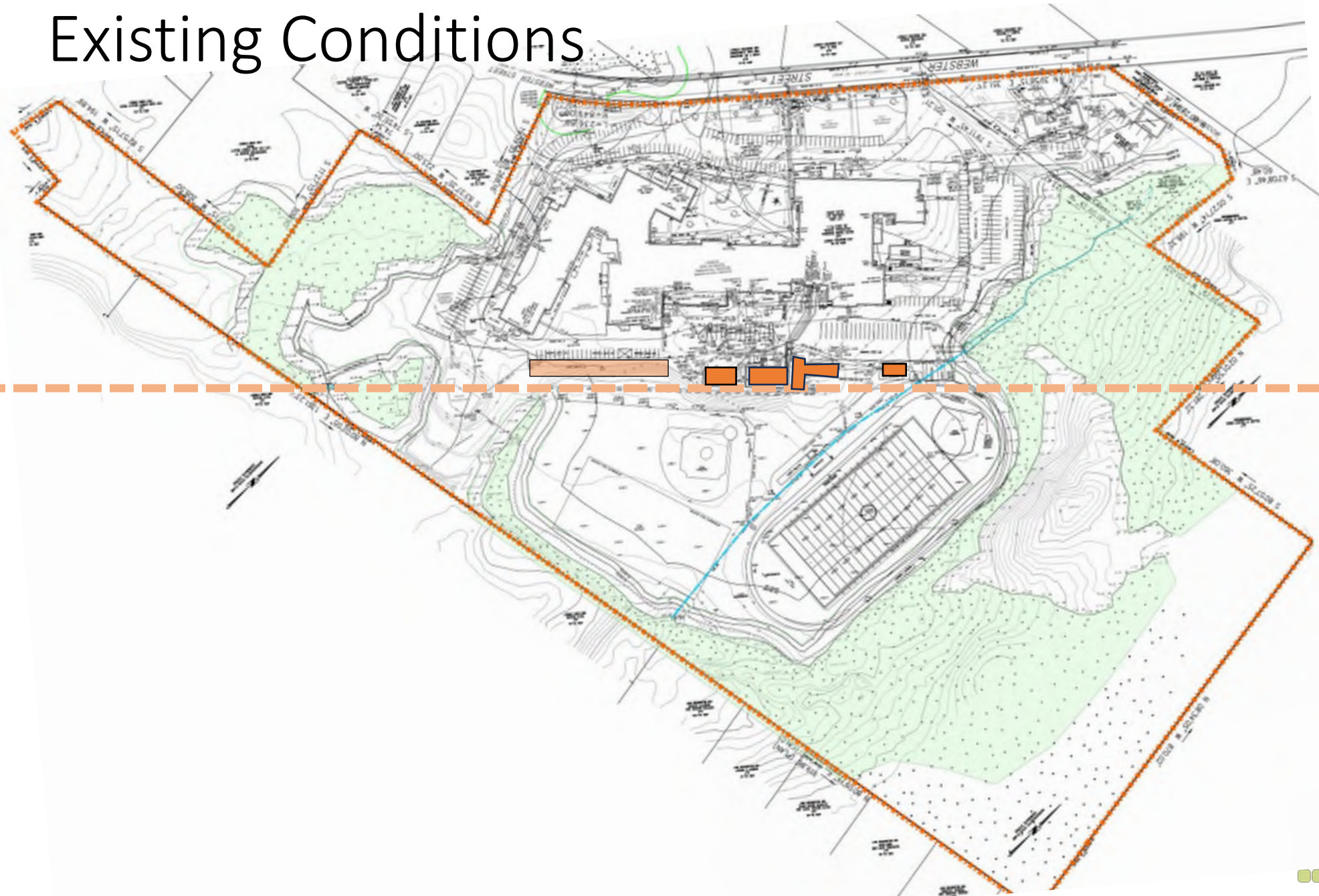
## Site Development Requirements

### Key issues

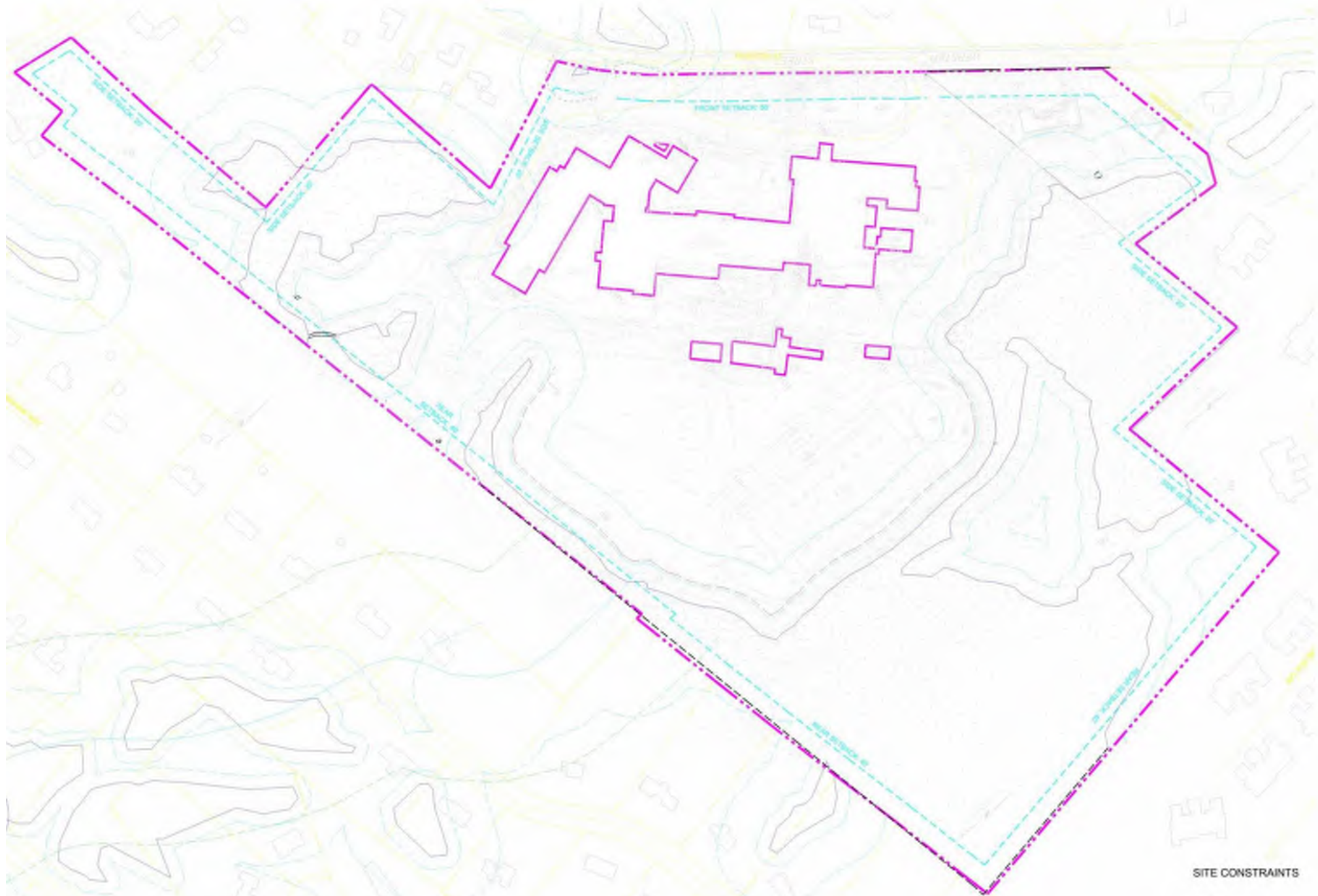
- Vehicular Circulation, Bus & Car Access
- Parking requirements
- Athletic Fields & support spaces
  - **Softball, Baseball, Football/MP, Track**
- Outdoor Learning opportunities
- Utilities
- Outbuildings
- Adjacent Property

Enrollments:	existing	805	900
Staff: (Admin & Teachers):	130	160	175
Approx. 2/3 of seniors:	108	134	150
Approx. 1/3 of juniors:	53	66	74
Visitors:	20	24	27
<b>TOTAL Parking Spaces:</b>	<b>311</b>	<b>384</b>	<b>426</b>
<i>Bus parking (one bus = 4 cars)</i>	<i>12</i>	<i>15</i>	<i>17</i>

# Existing Conditions

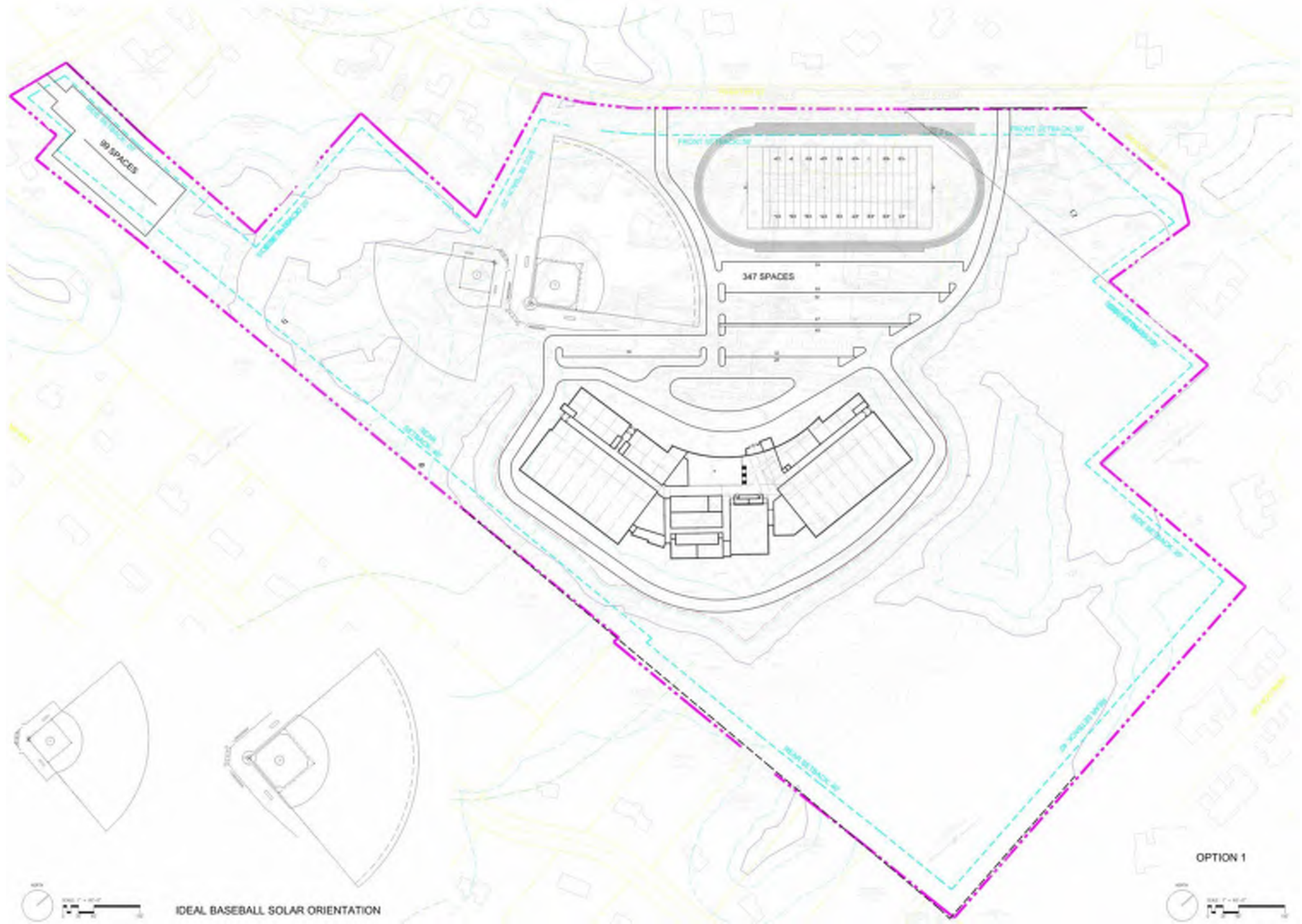




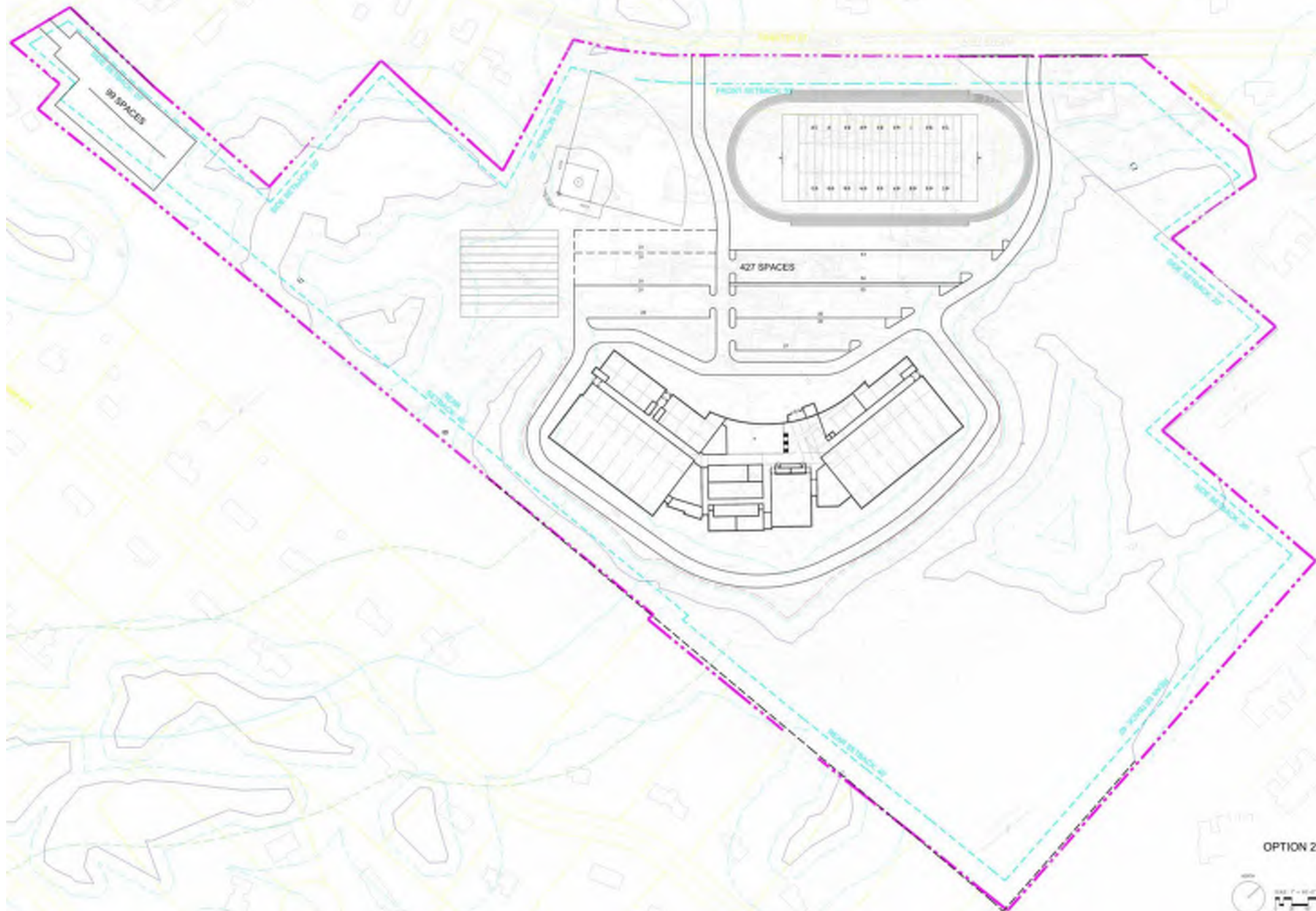


SITE CONSTRAINTS



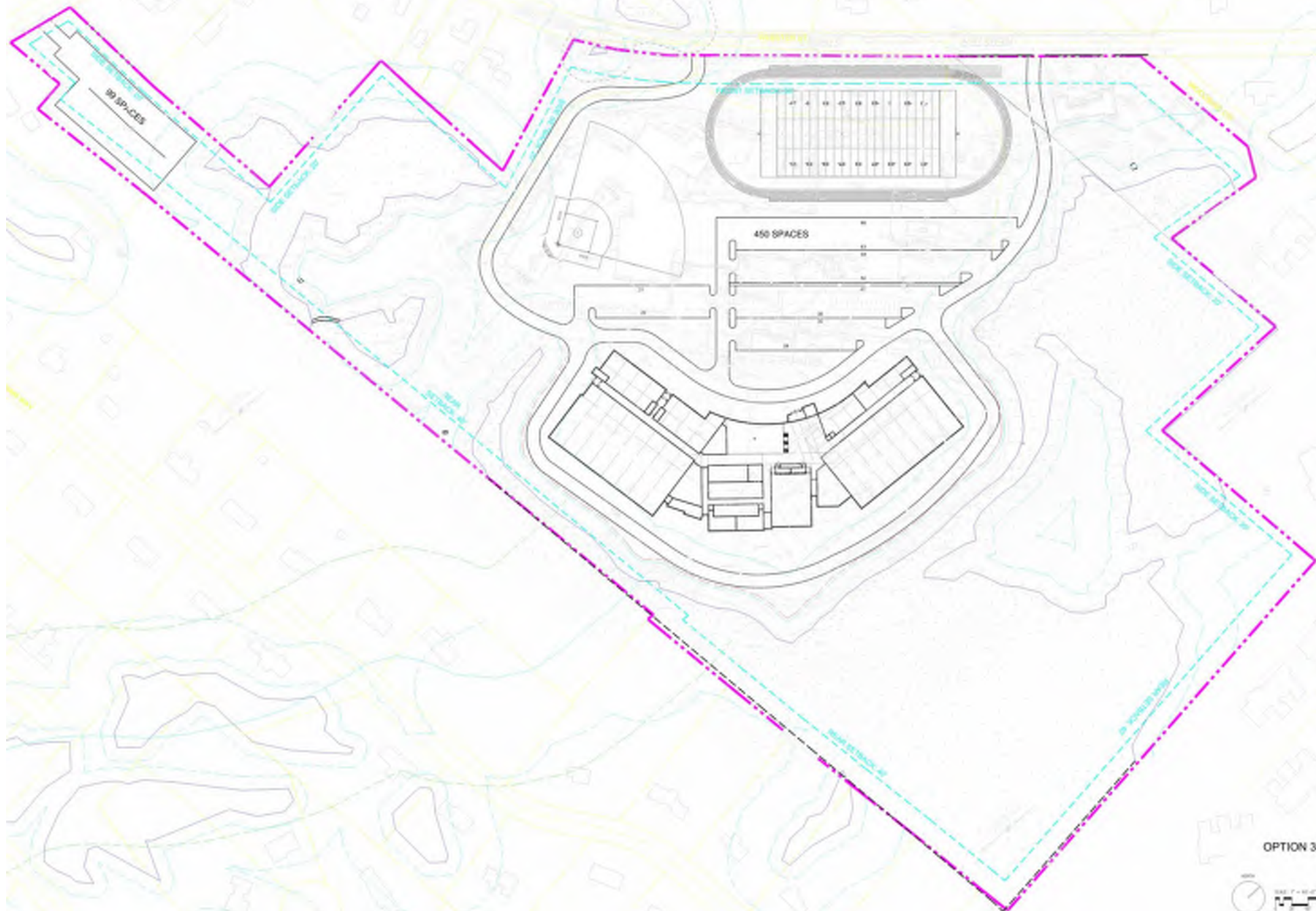






OPTION 2





OPTION 3

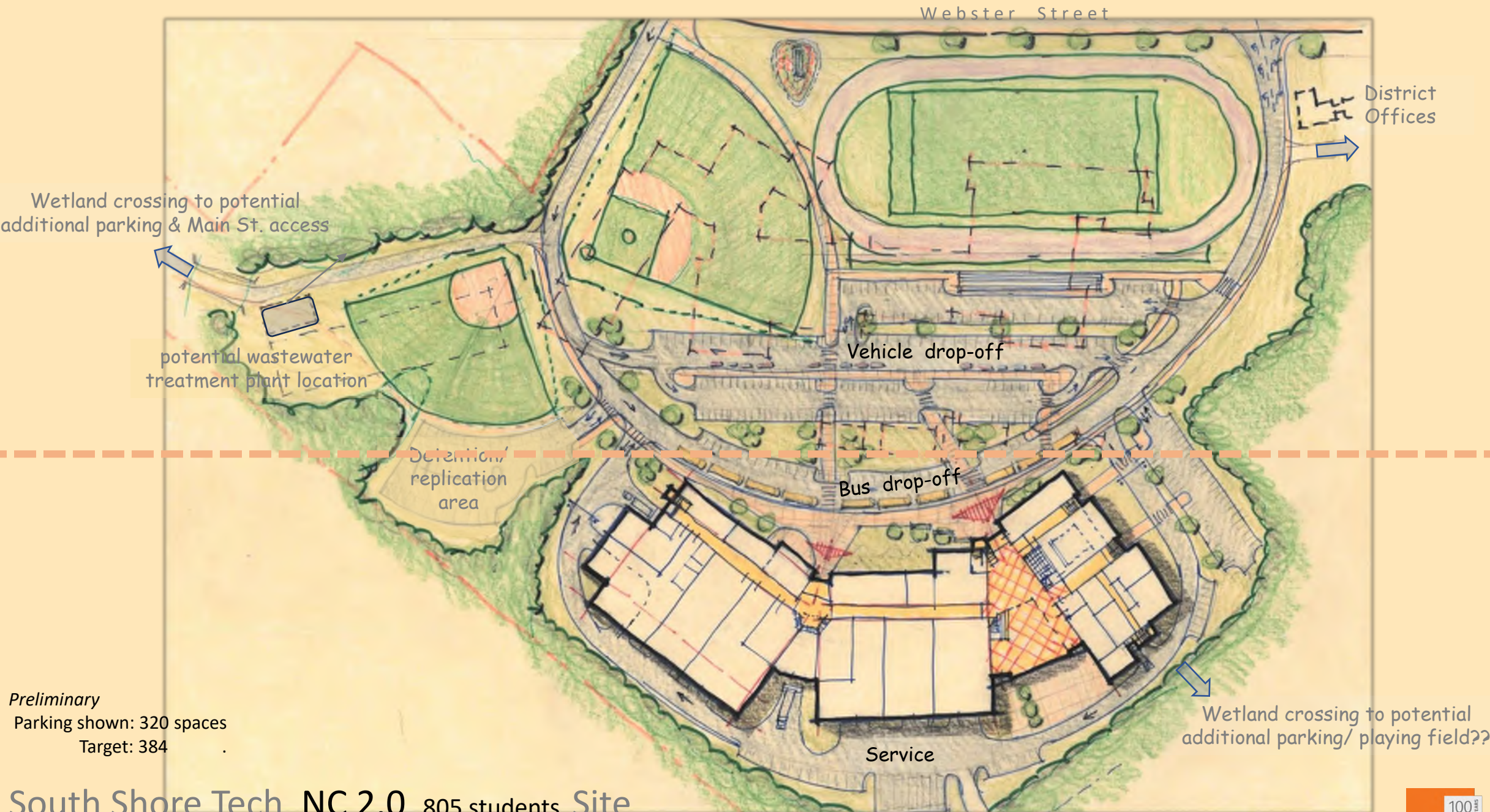




# Preliminary Options

## New Construction Options

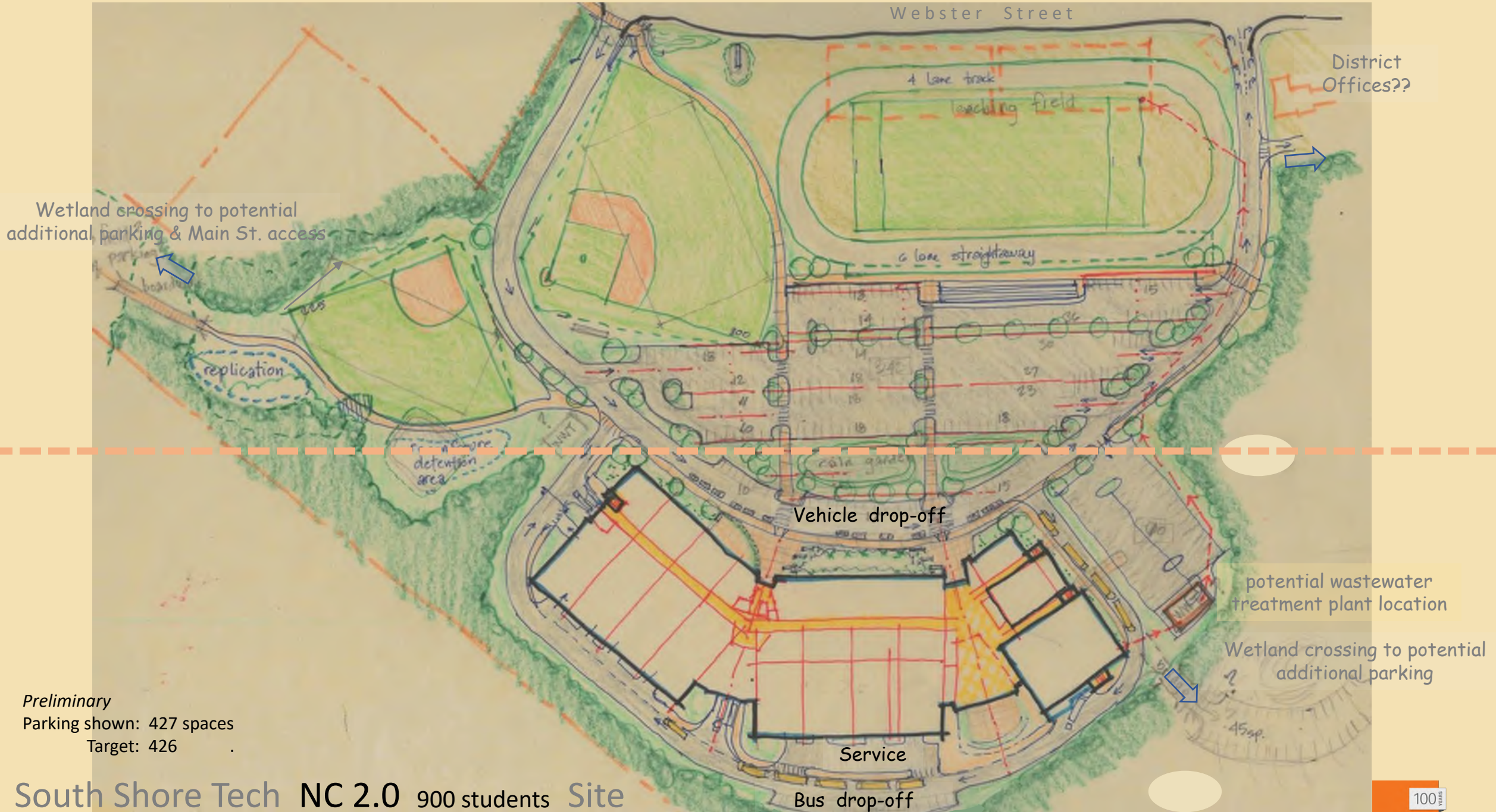
- NC-2.0 “Linear”
- NC-2.1 “Linear/ Center core”



Preliminary  
 Parking shown: 320 spaces  
 Target: 384

South Shore Tech NC 2.0 805 students Site

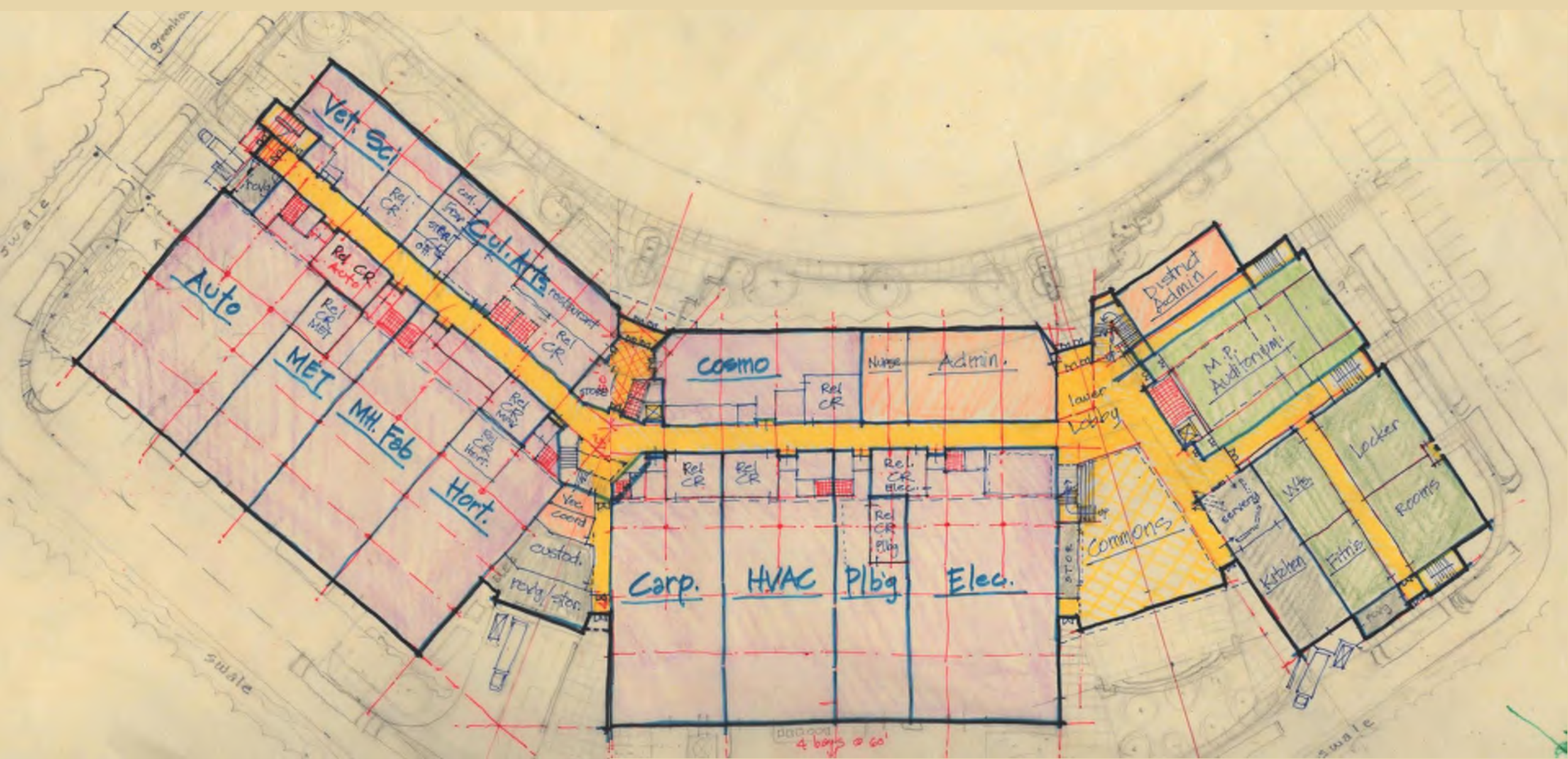




Preliminary  
 Parking shown: 427 spaces  
 Target: 426

South Shore Tech NC 2.0 900 students Site



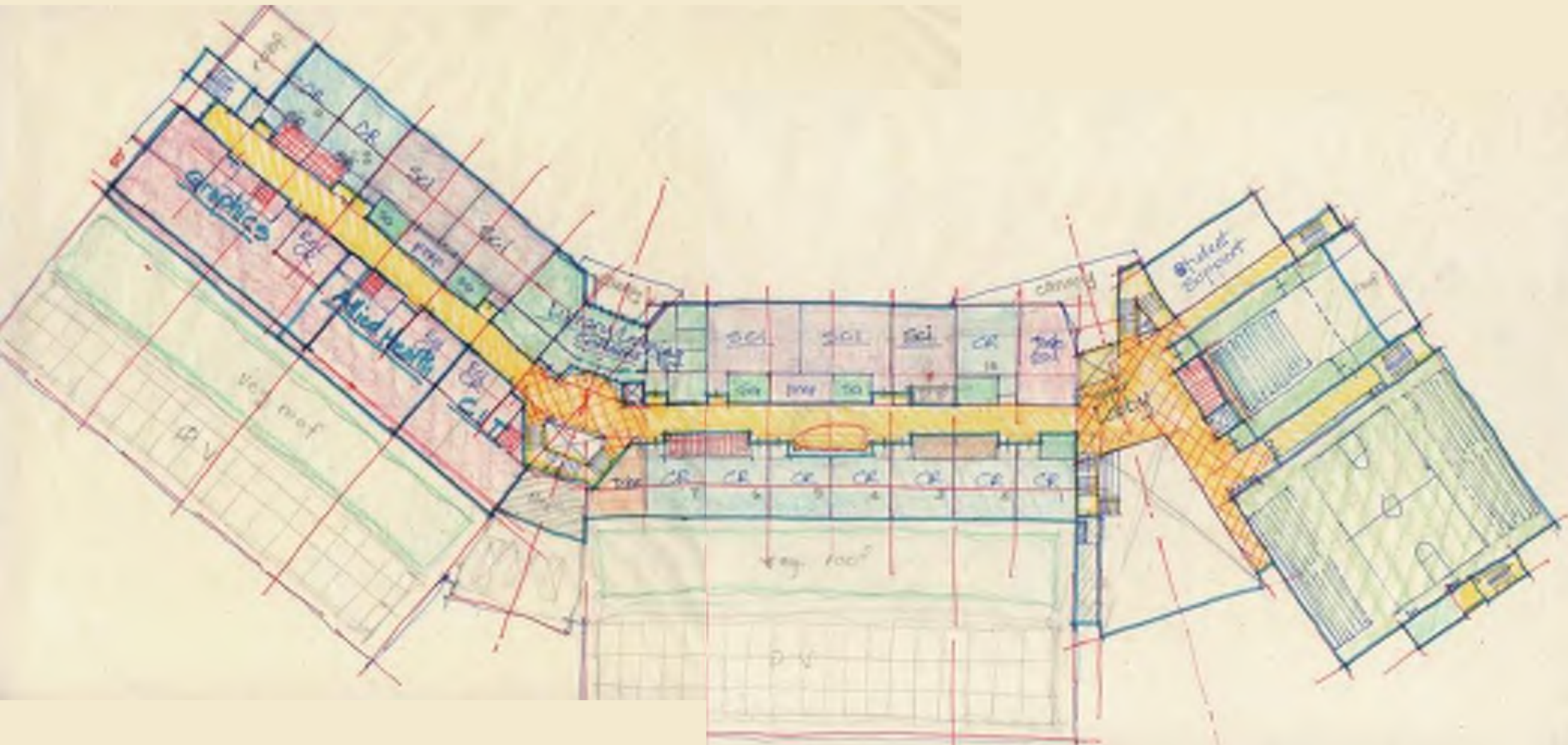


South Shore Tech **OPTION NC-2.0** 900 Students 1<sup>st</sup> Floor



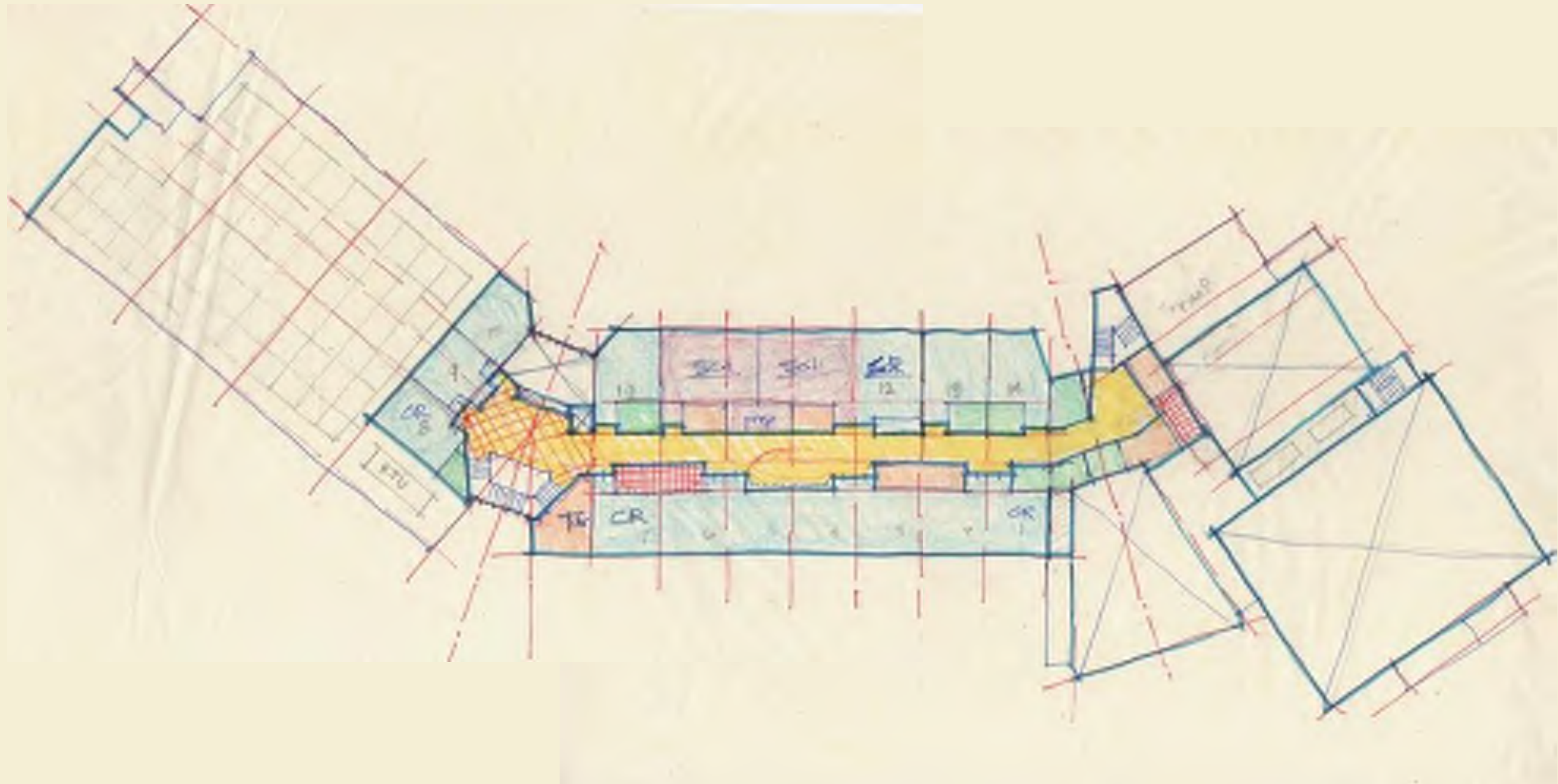


South Shore Tech OPTION NC-2.0 Single Secure Entrance



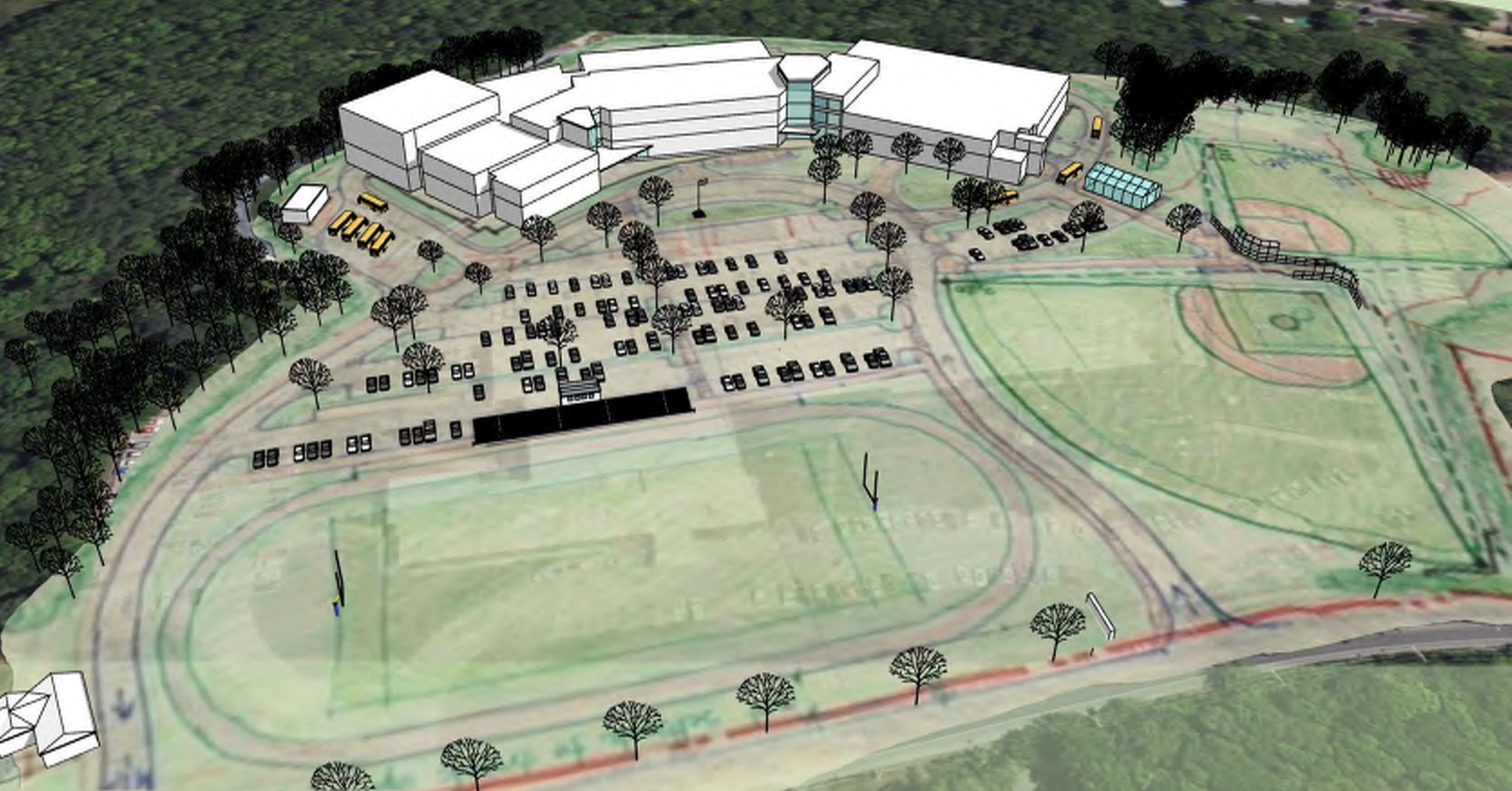
South Shore Tech **OPTION NC-2.0** 900 Students 2<sup>nd</sup> Floor





South Shore Tech OPTION **NC-2.0** 900 Students 3<sup>rd</sup> Floor



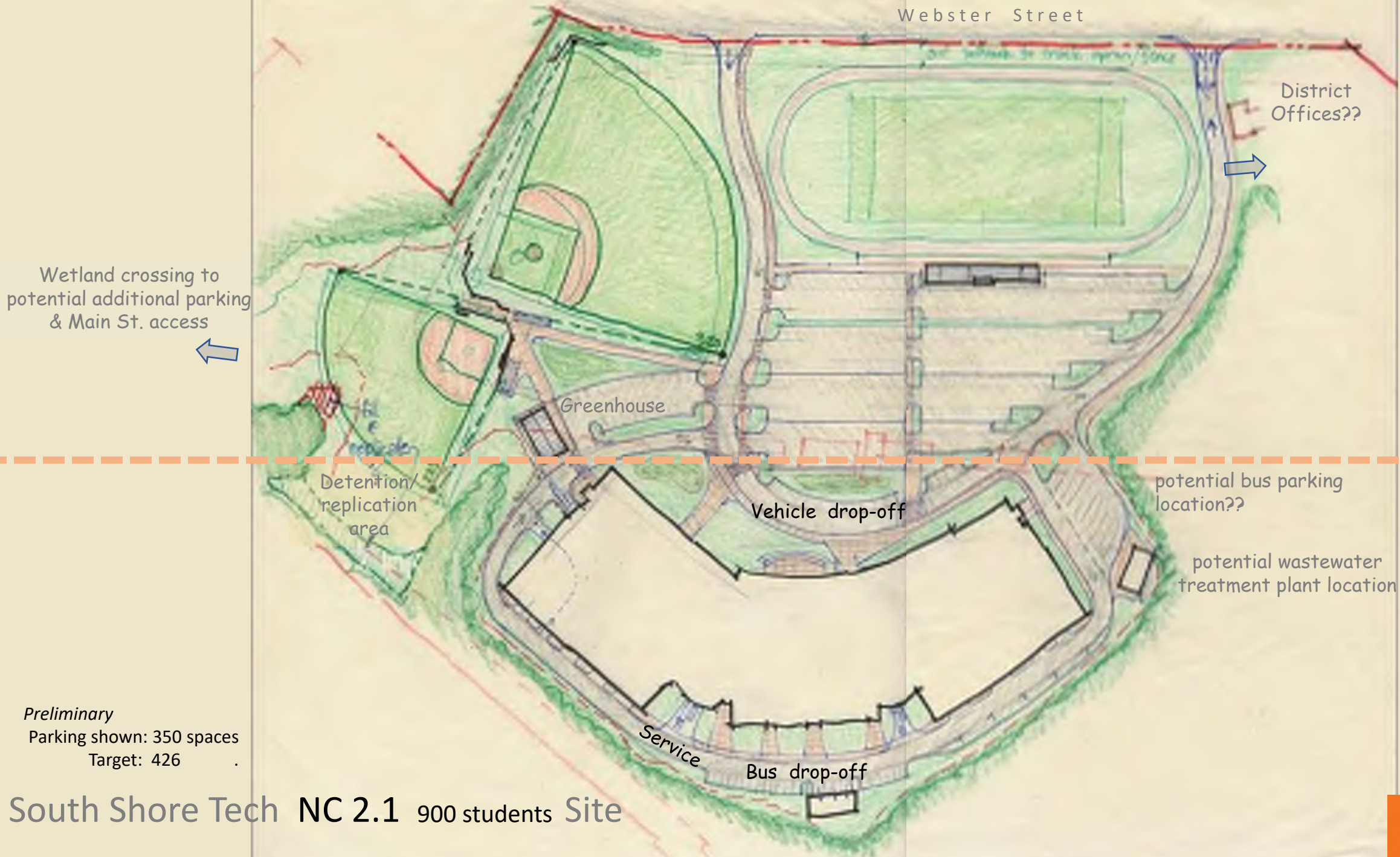


**OPTION NC-2.0** 900 Students





OPTION **NC-2.0** 900 Students View from Webster Street



Wetland crossing to potential additional parking & Main St. access

District Offices??

Greenhouse

Detention/replication area

Vehicle drop-off

potential bus parking location??

potential wastewater treatment plant location

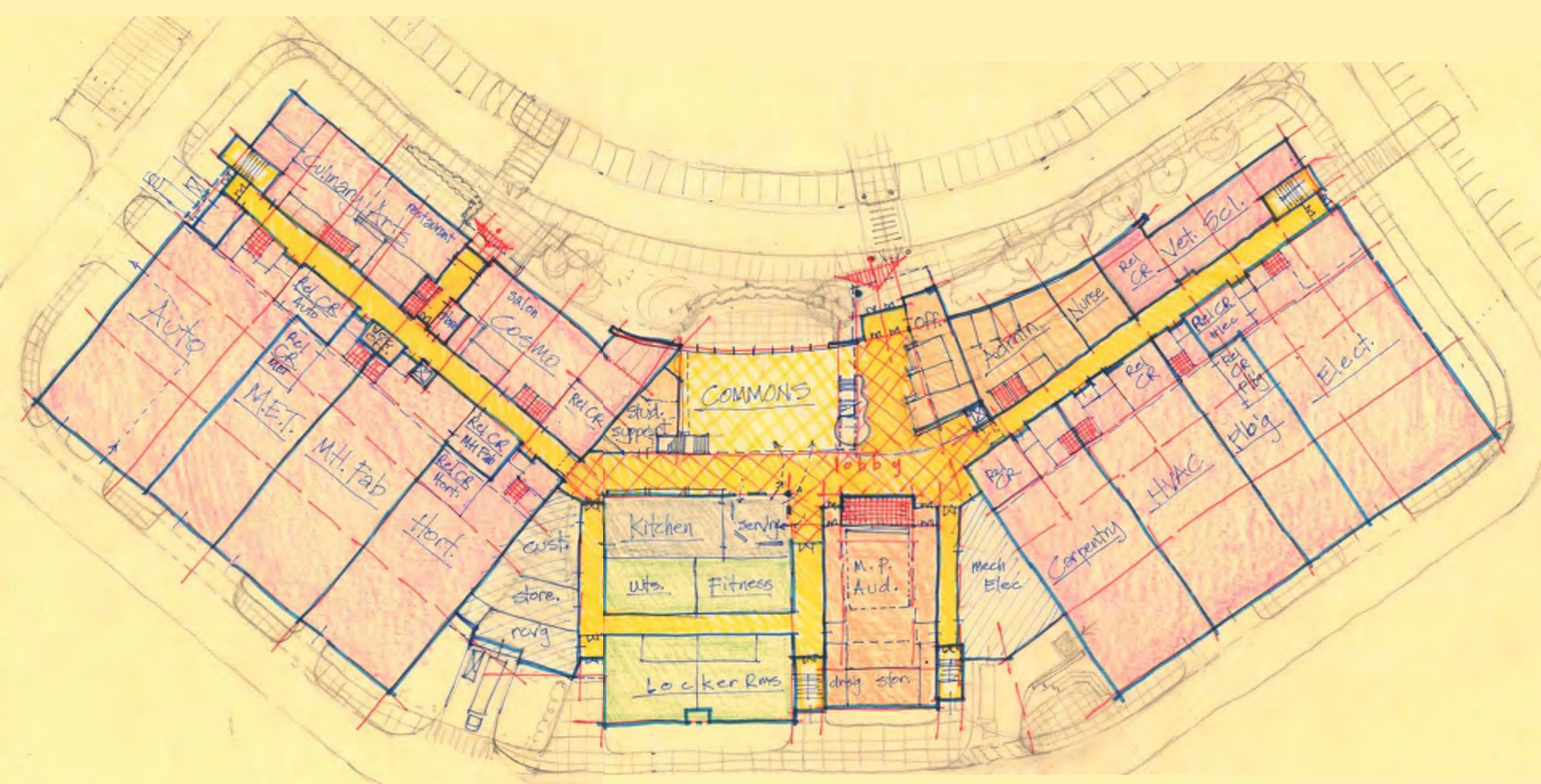
Service

Bus drop-off

Preliminary  
 Parking shown: 350 spaces  
 Target: 426

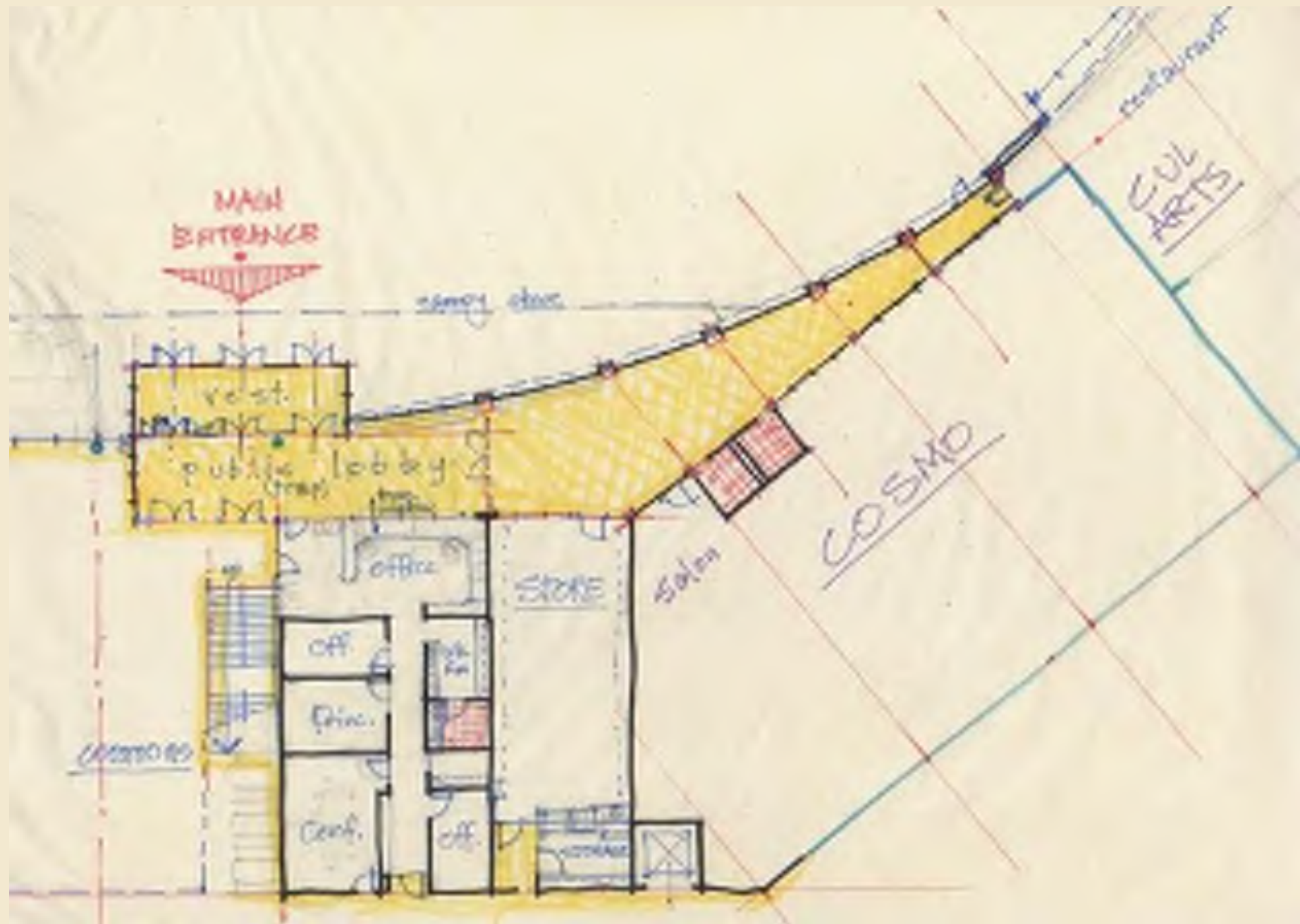
South Shore Tech NC 2.1 900 students Site





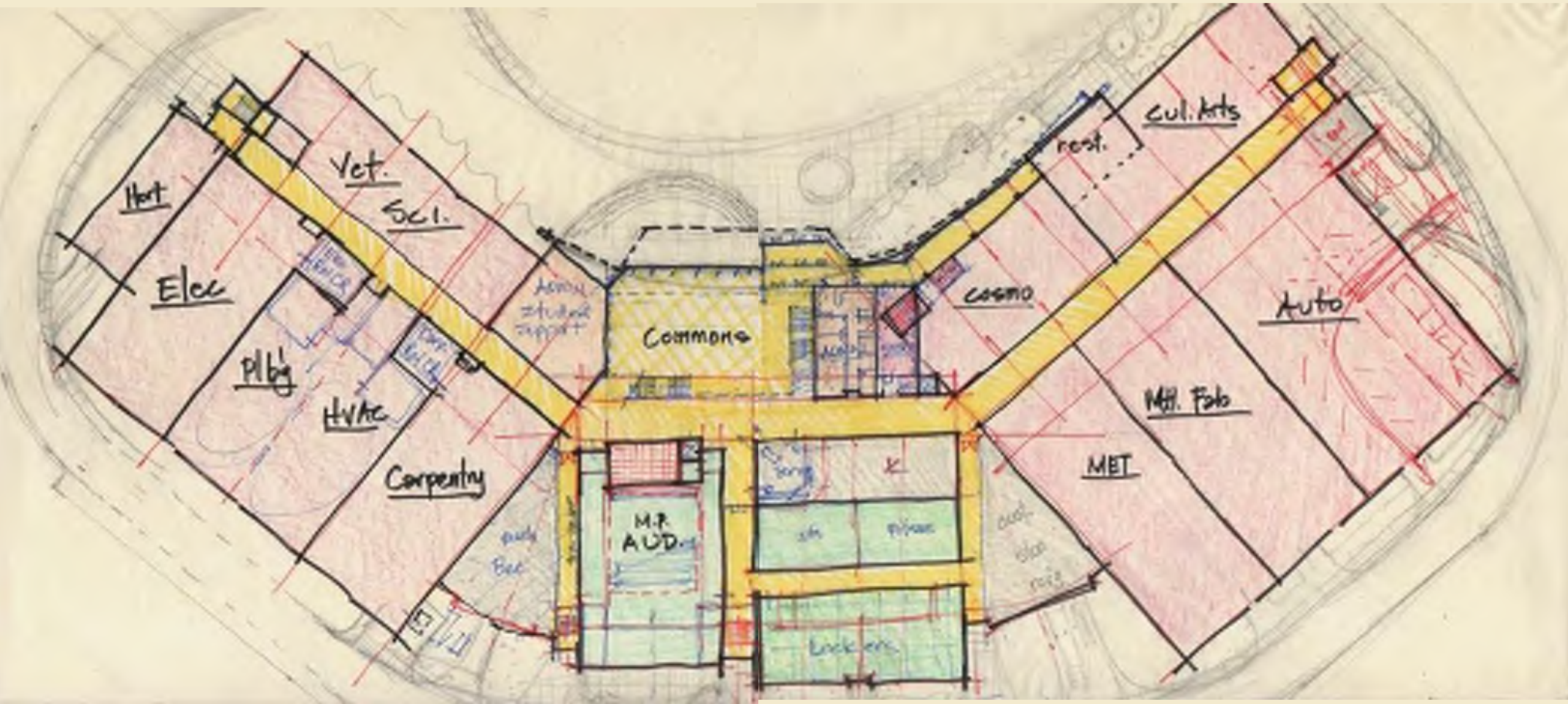
South Shore Tech OPTION NC-2.1 900 Students 1<sup>st</sup> Floor





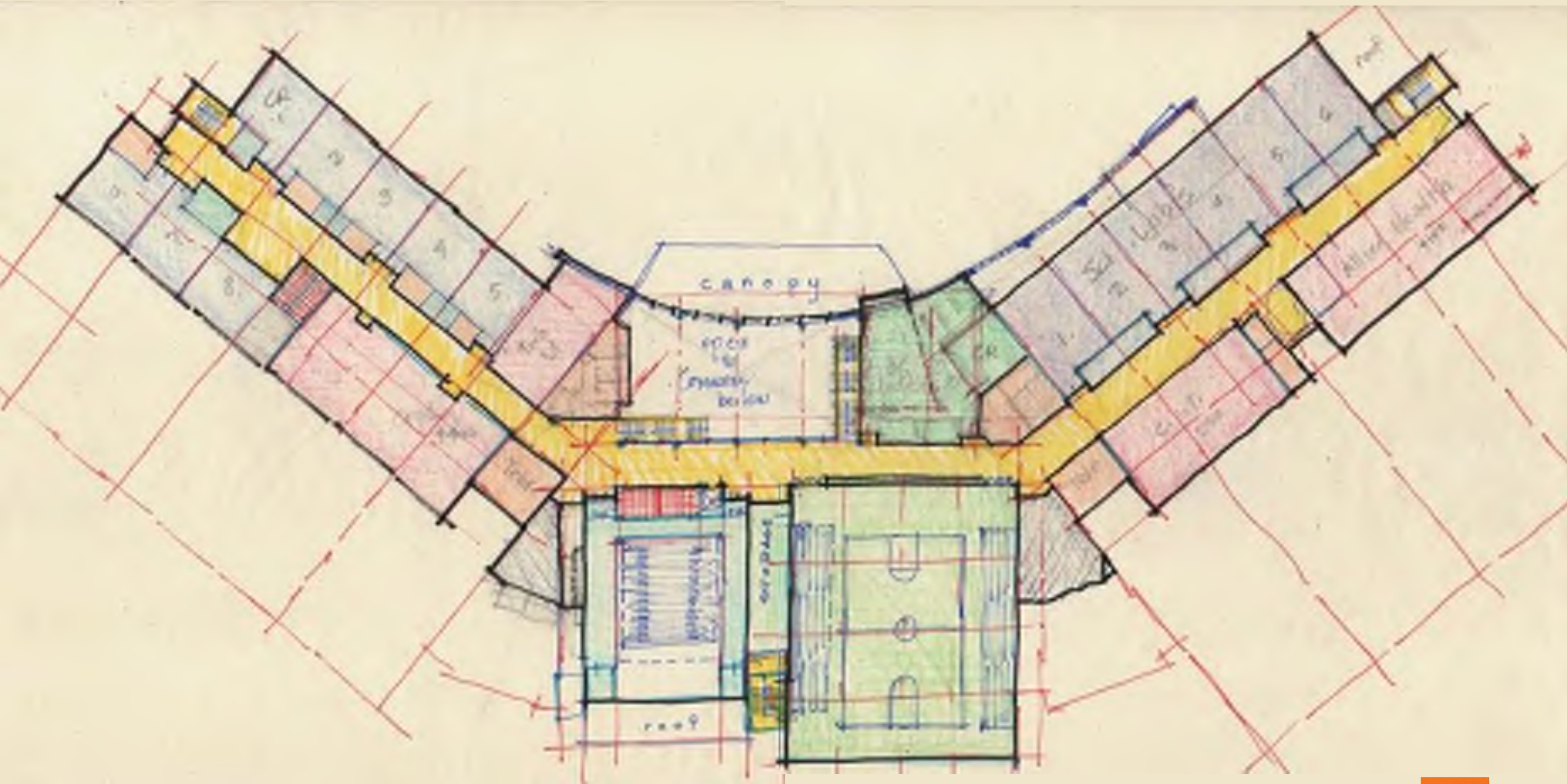
South Shore Tech OPTION **NC-2.1** Single Secure Entrance





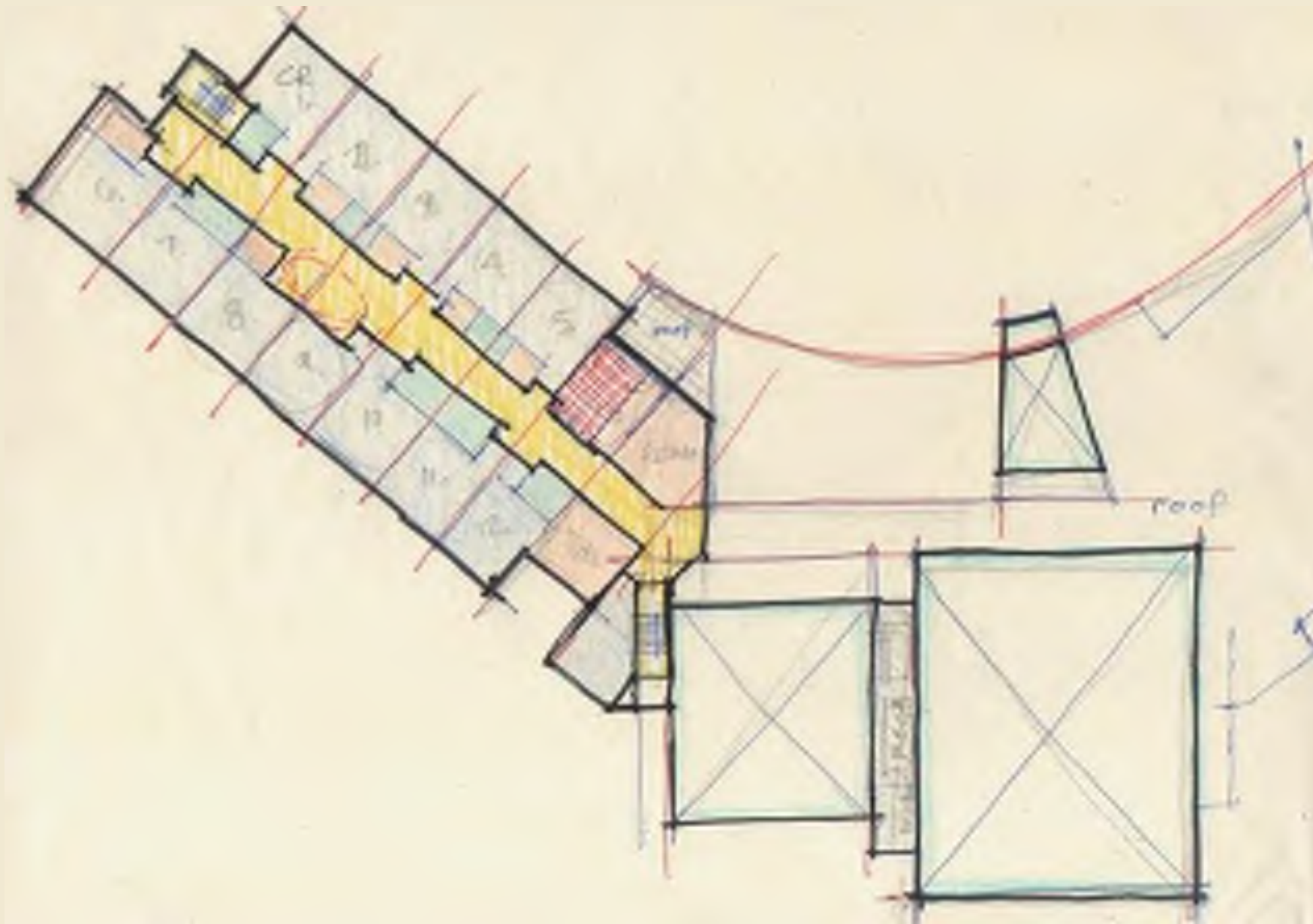
South Shore Tech OPTION **NC-2.1** 900 Students 1<sup>st</sup> Floor





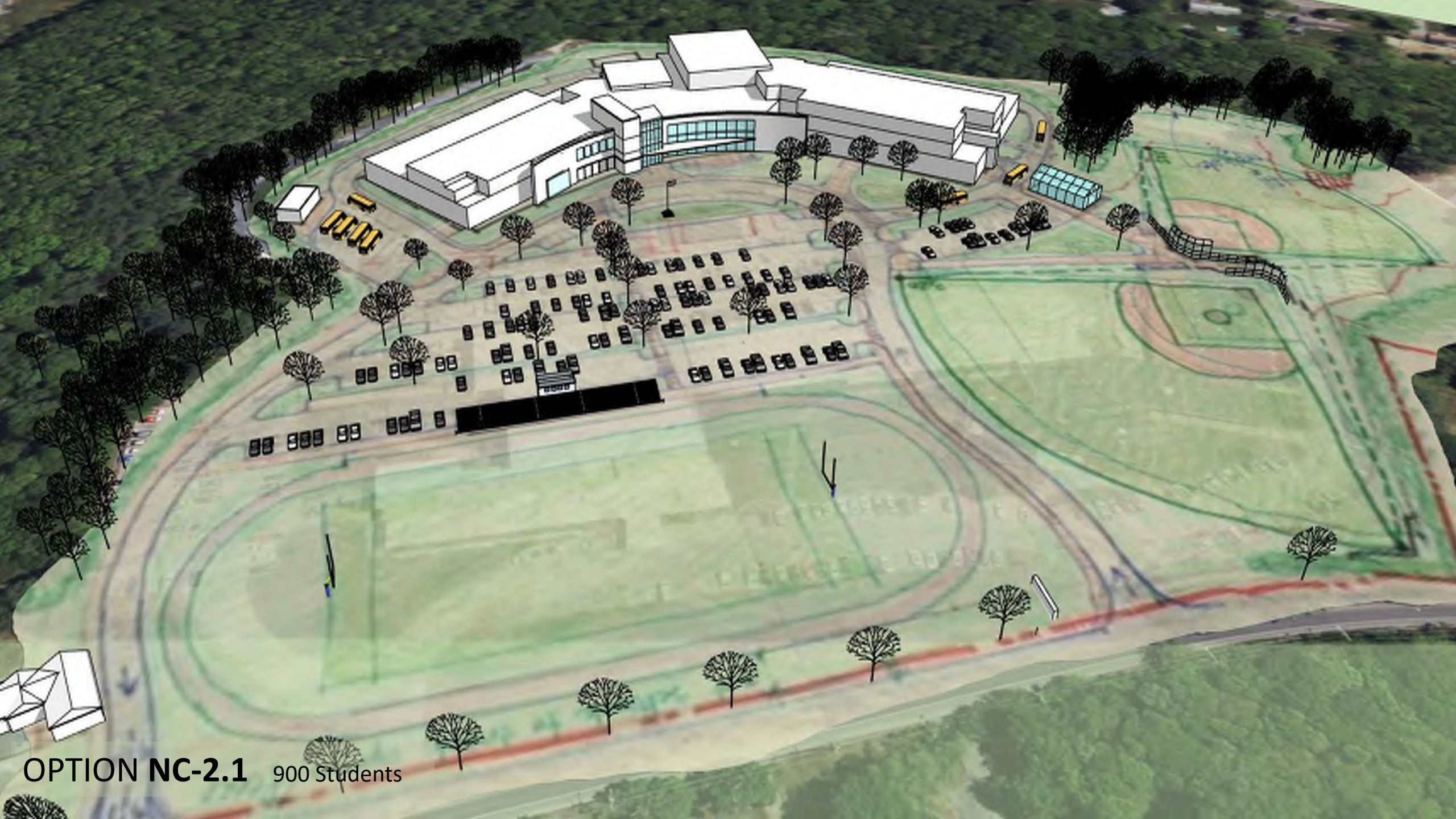
South Shore Tech OPTION **NC-2.1** 900 Students 2<sup>nd</sup> Floor





South Shore Tech OPTION **NC-2.1** 900 Students 3<sup>rd</sup> Floor





**OPTION NC-2.1** 900 Students





OPTION **NC-2.1** 900 Students View from Webster Street

# Preliminary Options



## Addition / Renovation Options

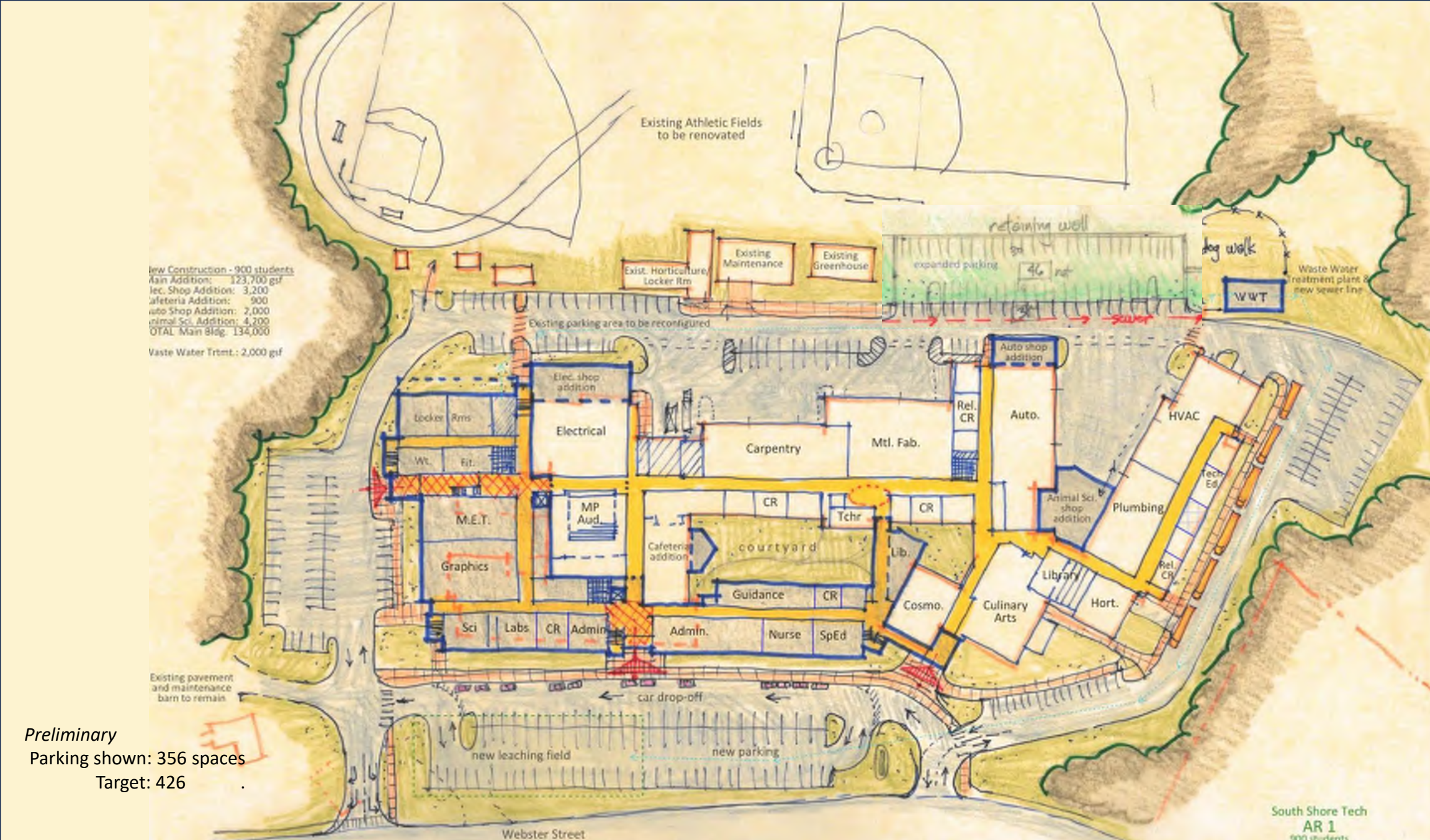
- AR-1 “L-Shaped”





Addition/Renovation Option



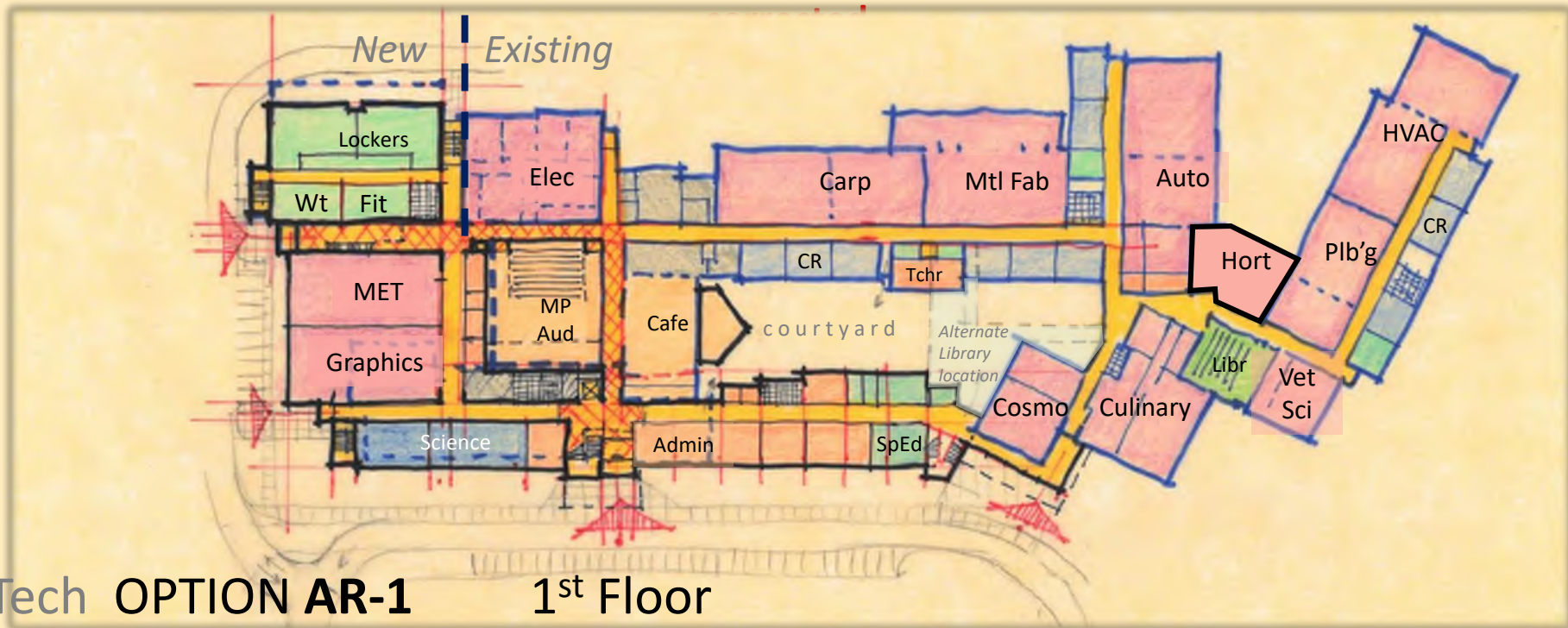
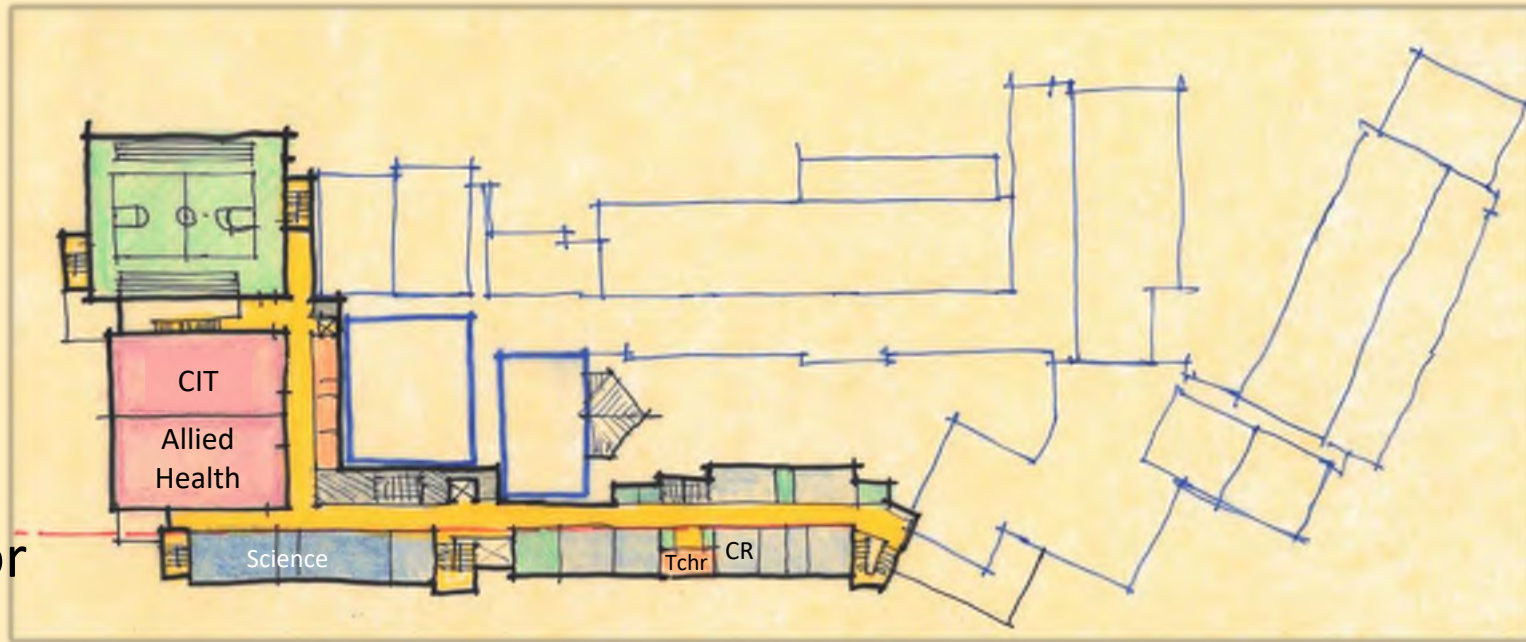


South Shore Tech  
AR 1  
900 students

South Shore Tech **OPTION AR-1** 900 students Site Plan



2<sup>nd</sup> Floor







OPTION AR 1



Student Enrollment Range: 645 - 975 Students	805 Students		900 Students		
	New* (all 3 options)	Add/Rene AR1 L Shape	New* (all 3 options)	Add/Rene AR1 L Shape	
<b>TOTAL ESTIMATED PROJECT COSTS</b>	\$ 344,190,750	\$ 345,805,000	\$ 367,913,625	\$ 366,758,125	
Cost/Student	\$ 427,566	\$ 434,540	\$ 408,793	\$ 407,509	
<b>Estimated MSBA Participation Range***</b>	32.4%	32.5%	30.8%	32.5%	
	\$ 304,633,988.00	\$ 326,690,525.00	\$ 113,317,396.50	\$ 111,851,228.13	
<b>Estimated District Share Range***</b>	69.5%	68.5%	69.2%	68.5%	
	\$ 239,556,762.00	\$ 243,134,475.00	\$ 254,596,228.50	\$ 254,896,896.88	
<b>Estimated Share By District****</b>					
Abington	16.76%	\$ 40,005,979.25	\$ 40,600,137.33	\$ 42,517,570.16	\$ 42,567,781.78
Cohasset	1.49%	\$ 3,569,395.75	\$ 3,622,405.68	\$ 3,793,483.80	\$ 3,797,963.76
Hanover	11.06%	\$ 26,434,977.88	\$ 26,888,460.94	\$ 28,358,342.87	\$ 28,131,596.79
Hanson	13.03%	\$ 31,214,246.09	\$ 31,677,836.09	\$ 33,173,888.57	\$ 33,213,065.66
Norwell	4.10%	\$ 9,821,827.24	\$ 9,967,693.48	\$ 10,438,445.37	\$ 10,450,772.77
Reckland	22.77%	\$ 54,547,074.71	\$ 55,357,165.96	\$ 57,971,561.23	\$ 58,040,023.42
Schuette	6.60%	\$ 15,810,746.29	\$ 16,045,555.35	\$ 16,803,351.08	\$ 16,823,195.19
Whitman	24.15%	\$ 58,092,514.79	\$ 58,955,200.19	\$ 61,739,585.41	\$ 61,812,497.49

\*Costs are the same across all New Construction Options for each enrollment - shown as a single cost for simplicity.

\*\*Costs based on CM at-Risk delivery method for simplicity.

\*\*\*Estimated MSBA Participation and District Share Ranges calculated without MSBA input. This range likely to change by the time the project finishes Schematic Design.

\*\*\*\*Based on October 1, 2023 reporting numbers.

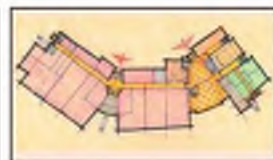
The estimated construction and total project cost provided are for **COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Preliminary Schematic Report (PSR) phase to assist the committee in defining the single preferred solution to proceed into the Schematic Design (SD) phase. The actual costs and total project budget will be established at the end of the Schematic Design (SD) phase for the district's preferred solution.

Preliminary Evaluation Matrix - South Shore Tech - Concept Options - **WORKING DRAFT**



Updated:  
9/14/2023

Evaluation Criteria		Concept Options						
		MSBA Required	Renovation	Add/ Reno Options		New Construction Options		
		Base Repair	Renovation	AR.1	AR.2	NC.1	NC.2	NC.3
		Code Renovation		L - Shaped	Lightwell	Courtyard	Linear	Wings
Construction Durations		multiple years		3+ years	4 years	2+ years	2+ years	2+ years
1	Ed Plan Accommodation Compliance w/ Vision	doesn't address any educational deficiencies	Not Possible - Existing building cannot meet the Space Needs for Target Enrollment	Adds most Space Needs Lacks meaningful integration of academic & CTL spaces	Adds some Space Needs Gym & Lecture Hall remain underused	Good Ed Plan conformance	Good Ed Plan Conformance	Best Ed Plan Conformance
2	Project Cost Reimbursable Cost Temporary Costs Long-term Value			Lower initial cost Higher reimbursement rate for renovation High temporary costs.	Lower initial cost Higher reimbursement rate for renovation Higher temporary costs Long Term Value Poor	Higher initial Construction Cost Good Long-Term Value	Higher initial Construction Cost Good Long-Term Value	Higher initial Construction Cost Good Long-Term Value
3	Disruption Impact on Students Construction Duration Phasing			Phased construction adjacent to occupancy Long construction schedule Multi-phase renovation	Phased construction adjacent to occupancy Long construction schedule Multi-phase renovation	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration	Minimal impact on adjacent occupancy. Less of Athletic Fields during construction. Short duration
4	Flexibility Community Use Expansion Potential			Some Flexibility Good community use Limited expansion potential	Limited flexibility Limited community use, lack of Auditorium Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential
5	Operating Costs Maintenance			Generally all new finish materials & systems Some existing infrastructure remains Limited building envelope upgrade	Generally all new finish materials & systems Some existing infrastructure remains Limited building envelope upgrade	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6	Site Access Safety & Security Circulation/ Flow			Site circulation similar to existing Potential admin presence at existing public entrance Remains somewhat sprawling	Site circulation similar to existing Unchanged access to public shops Remains somewhat sprawling, disjointed	Site Approach focused on School Dedicated secure access to public shops Compact footprint, central student commons	Site approach along edge of property Dedicated secure access to public shops Long linear corridor	Site Approach focused on School Dedicated secure access to public shops Some dead-end corridors
7	Final Site layout amenities Abutters			Similar to existing No additional site amenities Minimal new impact to abutters	Similar to existing No additional site amenities Minimal new impact to abutters	Larger footprint in a constrained site Bus access at rear Enclosed outdoor courtyard Playing fields may impact abutters	Building layout follows buildable area Separate Buses and Car drop-offs in front. Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Bus access at rear Patio off of the Commons Playing fields may impact abutters
8	Civic Image / Aesthetics			New "front door" and civic image	Minimal improved image Less opportunity to transform aesthetics	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image
<b>Totals</b>								





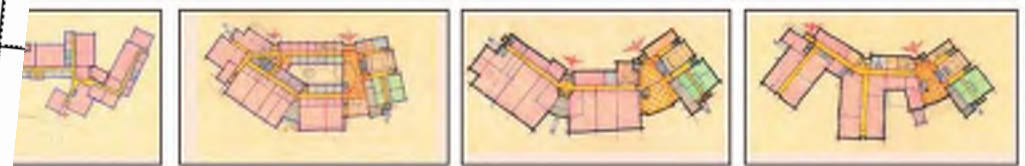
Updated:  
9/14/2023

Evaluation Criteria	MSBA Required	Renovation
	Base Repair	Renovation
Construction Duration:	Code Renovation	
	multiple years	
1 Ed Plan Accommodation Compliance w/ Vision	doesn't address any educational deficiencies	Not Possible - Existing building cannot meet the Space Needs for Target Enrollment
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value		
3 Disruption Impact on Students Construction Duration Phasing		
4 Flexibility Community Use Expansion Potential		
5 Operating Costs Maintenance		
6 Site Access Safety & Security Circulation/ Flow		
7 Final Site layout amenities Abutters	Site Impact to	
8 Civic Image / Aesthetics		
<b>Totals</b>		

5	positive / most advantageous
4	
3	neutral
2	
1	negative / least advantageous

Evaluation Criteria	Construction Duration:
1 Ed Plan Accommodation Compliance w/ Vision	
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value	
3 Disruption Impact on Students Construction Duration Phasing	
4 Flexibility Community Use Expansion Potential	
5 Operating Costs Maintenance	
6 Site Access Safety & Security Circulation/ Flow	
7 Final Site layout amenities Abutters	Site Impact to
8 Civic Image / Aesthetics	

	New Construction Options		
	NC.1	NC.2	NC.3
	Courtyard	Linear	Wings
	2+ years	2+ years	2+ years
1 Ed Plan Accommodation Compliance w/ Vision	Good Ed Plan conformance	Good Ed Plan Conformance	Best Ed Plan Conformance
2 Project Cost Reimbursable Cost Temporary Costs Long-term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value	Higher Initial Construction Cost Good Long-Term Value
3 Disruption Impact on Students Construction Duration Phasing	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction. Short duration 2 phases: 1. New construction, 2 Demolition & Sitework
4 Flexibility Community Use Expansion Potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential	Good Flexibility, Good Community access Limited expansion potential
5 Operating Costs Maintenance	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6 Site Access Safety & Security Circulation/ Flow	Site Approach focused on School Dedicated secure access to public shops Compact footprint, central student commons	Site approach along edge of property Dedicated secure access to public shops Long linear corridor	Site Approach focused on School Dedicated secure access to public shops Some dead-end corridors
7 Final Site layout amenities Abutters	Larger footprint in a constrained site Bus access at rear Playing fields may impact abutters School setback from street Athletic fields & parking in front yard All new construction = all new image	Building layout follows buildable area Separate Buses and Car drop-offs in front. Patio off of the Commons Playing fields may impact abutters School setback from street Athletic fields & parking in front yard All new construction = all new image	Wings create shared outdoor collaboration area Bus access at rear off of the Commons Playing fields may impact abutters School setback from street Athletic fields & parking in front yard All new construction = all new image
8 Civic Image / Aesthetics			



# Discussion

School Building Committee

November 2, 2023



100  
YEARS

DRA



# Thank you!

*Please note:*

Upcoming Community Meetings:

November 9	Marshfield Town Hall	6 pm
December 5	Rockland Senior Center	7 pm
December 14	Whitman Town Hall	7 pm

School Building Committee

November 2, 2023





# CMR v. DBB PRESENTATION

CONSTRUCTION DELIVERY METHOD



## **Design-Bid-Build**

(M.G.L. Chapter 149)



## **CM at Risk**

(M.G.L. Chapter 149A)

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Chapter 193 of the Acts and Resolves of 2004

Known as the public construction reform law, these Acts created a new statute, MGL Chapter 149A, which contained provisions authorizing and governing the use of two optional alternative delivery methods for public construction projects in Massachusetts: construction management at-risk (CM at Risk) for building projects estimated to cost \$5 million or more and design-build for public works projects estimated to cost \$5 million or more. The provisions of MGL Chapter 149A took effect on January 1, 2005.



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Overall Comparison of Delivery Methods

<b>Design-Bid-Build</b>	<b>Construction Manager at Risk</b>
<ul style="list-style-type: none"><li>▪ Design and Construction Stages Proceed Sequentially</li><li>▪ Lump Sum Bid/Budget Based on Completed Design</li><li>▪ General Contractors are Prequalified</li><li>▪ General Contractor with Lowest Bid is Selected; No Choice</li><li>▪ Owner Executes Lump Sum Contract with General Contractor</li><li>▪ Typically there is One Bid Package but Site Prep can be Issued Separately</li></ul>	<ul style="list-style-type: none"><li>▪ CM at Risk Selected Early in the Design Stage and Design/Construction can Overlap for Faster Schedule/Occupancy</li><li>▪ Construction Cost is Collaboratively Developed</li><li>▪ CM Selected Based on Qualifications and Fee</li><li>▪ CM is Part of the Design Process/Partner</li><li>▪ Owner Negotiates a Guaranteed Maximum Price (Cost plus Fixed Fee)</li><li>▪ Ability for Multiple Bid Packages</li></ul>

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Overall Comparison of Delivery Methods

<b>Design-Bid-Build</b>	<b>Construction Manager at Risk</b>
<ul style="list-style-type: none"><li>▪ Competitive Non-Collaborative Process</li><li>▪ All Changes Results in Change Orders</li><li>▪ Initial Costs for this Project are 5% Lower</li><li>▪ General Contractor with Lowest Bid is Selected</li><li>▪ Risk Equals Higher Cost</li><li>▪ Longer Schedule Equals Higher Cost</li><li>▪ No Ability to Select/Negotiate with Subcontractors</li><li>▪ All Bid Savings go to General Contractor</li></ul>	<ul style="list-style-type: none"><li>▪ Collaborative Process; Non-Adversarial</li><li>▪ CM during Design Results in Fewer Change Orders; Constructability Analysis</li><li>▪ Ability to Accelerate Schedule and Fewer Change Orders Results in Comparable End Cost</li><li>▪ Greater Ability for Risk Management</li><li>▪ Common Goals for Project Schedule</li><li>▪ Ability to Select/Negotiate with CM/Subcontractors</li></ul>



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Advantages

#### Design-Bid Build

- Familiar delivery method
- Simpler process to manage
- Fully defined project scope for construction
- Lower initial price. Perceived as getting “best price” by awarding to lowest responsible bidder
- One single bid after construction documents are 100% complete
- Owner/Designer can completely control design
- Simple accounting

**BEST SUITED FOR: Less complicated projects that are budget-sensitive, but are not schedule sensitive and not subject to change.**

#### CM-R

- Selection based on qualifications, experience & proposed team rather than lowest price/bid
- Design phase assistance with budgeting, site logistics and constructability results in ability to address challenges early
- Early cost estimates & feedback to help in the design process results in a more accurate cost model
- Allows for multiple early bid packages to accelerate construction schedule
  - Typical higher initial cost, but comparable in the end once acceleration of construction and savings associated with escalation are factored
- Team concept with Owner, OPM, Designer
- Typically CMs have much larger bonding capacities

**BEST SUITED FOR: Projects that are time sensitive, challenging to define or subject to potential changes; projects requiring high construction oversight due to site logistics and phases as well as multiple stakeholders.**

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Disadvantages

#### Design-Bid-Build

- Linear process may equate to a longer schedule duration
- No choice in GC; low bidder prevails
- Hard price not known until bids are received; may require re-design and re-bid if bids exceed budget
- Minimal GC project management
- No GC input in design, planning or budgets
- The designer may have limited ability to assess scheduling and cost ramifications as the design is developed which can lead to a more costly final product
- Typically fosters adversarial relationships between all parties and increases probability of disputes
- Prone to changes and claims which may increase final project cost
- All modifications and changes results in Change Orders with no ability or flexibility within the lump sum bid price

#### CM-R

- Requires an OPM or Owner with an understanding of the CM process and GMP mechanics
- Potential for higher up-front cost due to “filling holes” in scope and/or documents (with result of minimizing future change orders and avoiding delays)
- Potential adversarial relationship when design intent is challenged when “design-to-budget” or “price cutting” is pushed
- Bidding early requires extra due diligence in covering complete scope of work



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Cost Comparison of Delivery Methods

#### Cost Differentiators:

- CMR Costs include a Change Contingency (GMP Contingency) and DBB does not. This represents 3% of the cost difference.
- CMR has preconstruction costs for their involvement during design which helps ensure that the construction budget is accurate and maintained.
- Schedule acceleration typically offsets the higher upfront costs.

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### Schedule Comparison of Delivery Methods

Schedule Issues Impacting Acceleration of Schedule:

- Design Deliverables
- MSBA Submission Dates
- Construction Start and Weather
- School Schedule

These influences on the Construction Schedule need to be coordinated in order to deliver an accelerated construction schedule.



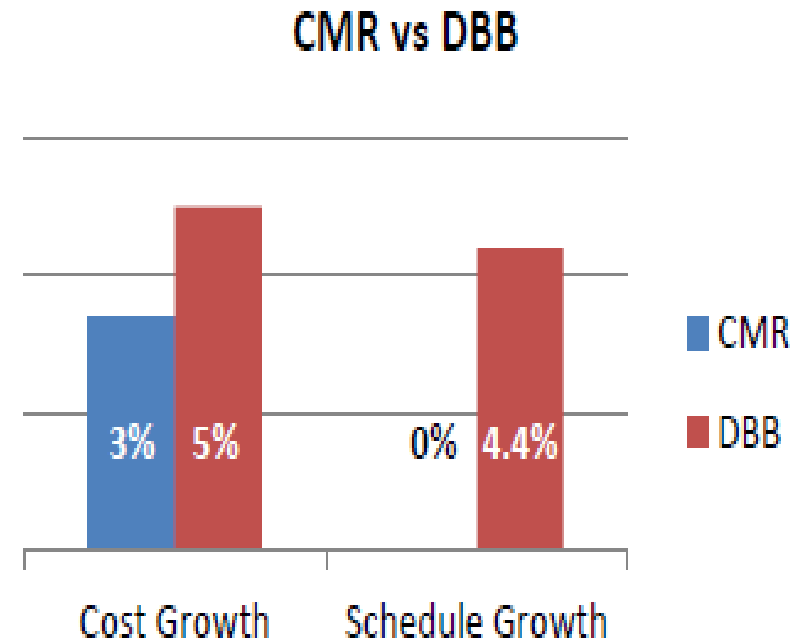
# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD

### Project Delivery Metrics for Analysis

CMR Project Delivery Method  
Outperformed DBB in terms of  
following metrics:

- **Cost Performance**
- **Schedule Performance**
- **Quality Outcomes**



*Overview of Research and Study performed by Construction Industry Institute, American Society of Civil Engineers, Pennsylvania State University, Iowa State University, University of North Carolina and State of Washington*

November 30, 2023

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### General Project Risks with Both Project Delivery Methods

- Unforeseen Conditions (30, 39M) for both building and site conditions
- Incomplete architectural documents
- Poor or questionable qualifications of sub contractors, poor performance. Pool of contractors available
- Sub contractor or Trade contractor failures
- Working on and around occupied facilities
- Complex site logistics, phasing, occupied sites
- Less cooperative team environment
- Inadequate or over staffed GC/CM or general requirements
- Potential bid protests



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## SOUTH SHORE TECH HIGH SCHOOL PROJECT – Hanover, MA

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### MEETING OF THE SOUTH SHORE TECH SCHOOL BUILDING COMMITTEE (SBC)

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Date: Thursday, December 14, 2023

Time: 3:00PM

Via Zoom: <https://us06web.zoom.us/j/89428951497?pwd=BWBVippknPHbmLWdZiCixuHQxJY6Ds.1>

Call In: +1 646-558-8656

Meeting ID: 894 2895 1497

Passcode: 010873

## Agenda

1. Public comment
2. Project Approvals:
  - Vote to Approve Meeting Minutes:
    - November 15, 2023 SBC Meeting Minutes
    - November 30, 2023 SBC Meeting Minutes
  - Vote to Approve LeftField Contract Amendment #2
  - Vote to Approve Invoices – LeftField and DRA Architects
3. Budget Update
4. Schedule Overview
5. Construction Delivery Method Review (Design/Bid/Build or Construction Manager at Risk)
  - Possible vote to select a Construction Delivery Method
6. Design Options
  - Review Building Design Options
  - Review Updated Site Design Options
  - Possible Vote on general configuration of the athletic fields and site layout
7. Adjourn

# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

December 14, 2023



100  
YEARS

DRA



# Agenda



1. Public comment
2. Project Approvals:
  - Vote to Approve Meeting Minutes:
    - November 15, 2023 SBC Meeting Minutes
  - Vote to Approve LeftField Contract Amendment #2
  - Vote to Approve Invoices – LeftField and DRA Architects
2. Budget Update
3. Schedule Overview
4. Construction Delivery Method Review (Design/Bid/Build or Construction Manager at Risk)
  - Possible vote to select a Construction Delivery Method
5. Design Options
  - Review Building Design Options
  - Review Updated Site Design Options
  - Possible Vote on general configuration of the athletic fields and site layout
6. Adjourn

# MEETING MINUTES



## **SUGGESTED VOTE:**

**Vote to approve meeting minutes from the November 15, 2023 SBC Meeting**

December 14, 2023



# OPM Contract Amendment #2



## Scope Included:

- Project Cost Estimating Services through AM Fogarty:
  - PSR Phase Estimates: \$9,000
  - SD Phase Estimates: \$16,500
  - 10% LF Markup: \$2,550

## Timeline for Work:

- December 2024/January 2024
- May 2024/June 2024

Fee for Basic Services	Original Contract	Previous Amendments	Amount of This Amendment	After This Amendment
Feasibility Study/Schematic Design Phase:	\$180,000.00	\$ 220,000.00	\$ 28,050.00	\$ 428,050.00
Design Development Phase:	\$ 0	\$ 0	\$ 0	\$ 0
Construction Documents Phase:	\$ 0	\$ 0	\$ 0	\$ 0
Bidding Phase:	\$ 0	\$ 0	\$ 0	\$ 0
Construction Phase:	\$ 0	\$ 0	\$ 0	\$ 0
Completion Phase:	\$ 0	\$ 0	\$ 0	\$ 0
<b>Total Fee</b>	<b>\$180,000.00</b>	<b>\$ 220,000.00</b>	<b>\$ 28,050.00</b>	<b>\$ 428,050.00</b>

# Invoices



- Project Invoices - **TOTAL \$35,250.75**

INVOICES						
ProPay Code	Invoice Date	Vendor	Invoice #	Budget Category	Description of Services	Invoice \$
0001-0000	11/30/23	LeftField, LLC	8	OPM – Feasibility Study/ Schematic Design	OPM Feasibility Study Services November 1 – November 31, 2023	\$29,000.00
0002-0000	11/30/23	DRA	A1-2	A/E - Feasibility Study/ Schematic Design	Amendment #1 - Preliminary Geotech Study, ESA Phase 1	\$4,677.75
0002-0000	11/30/23	DRA	A2-2	A/E - Feasibility Study/ Schematic Design	Amendment #2 – Hazmat Investigation, Report, Estimate	\$1,573.00
					<b>TOTAL:</b>	<b>\$35,250.75</b>



# Total Project Budget Update



South Shore Regional Vocational Technical High School - Hanover, MA									
Total Project Budget Status Report									
ProPay Code	Description	Total Project Budget	Authorized Changes	Revised Total Budget	Total Committed	% Cmtd to Date	Actual Spent to Date	% Spent to Date	Balance To Spend
<b>FEASIBILITY STUDY AGREEMENT</b>									
0001-0000	OPM Feasibility Study/Schematic Design	\$ 400,000	\$28,050	\$ 428,050	\$ 428,050	100%	\$ 198,000	46%	\$ 230,050
0002-0000	A&E Feasibility Study/Schematic Design	\$ 1,100,000		\$ 1,100,000	\$ 1,059,950	96%	\$ 454,361	41%	\$ 645,639
0003-0000	Environmental & Site	\$ 300,000		\$ 300,000	\$ -	0%	\$ -	0%	\$ 300,000
0004-0000	Other	\$ 200,000	\$ (28,050)	\$ 171,950	\$ -	0%	\$ -	0%	\$ 171,950
	<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,488,000</b>	<b>74%</b>	<b>\$ 652,361</b>	<b>33%</b>	<b>\$ 1,347,639</b>
<b>TOTAL PROJECT BUDGET</b>		<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,488,000</b>	<b>74%</b>	<b>\$ 652,361</b>	<b>33%</b>	<b>\$ 1,347,639</b>
<b>FUNDING SOURCES</b>									
	Maximum State Share	\$ 1,112,600	\$ 1,112,600						
	Local Share	\$ 887,400	\$ 887,400						
	<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ 2,000,000</b>						
				Project Budget	Scope Items Excluded	Contingencies	Basis of Total Facilities Grant	Reimbursement Rate	
				\$ 2,000,000	\$ -	\$ -	\$ 2,000,000	55.63%	

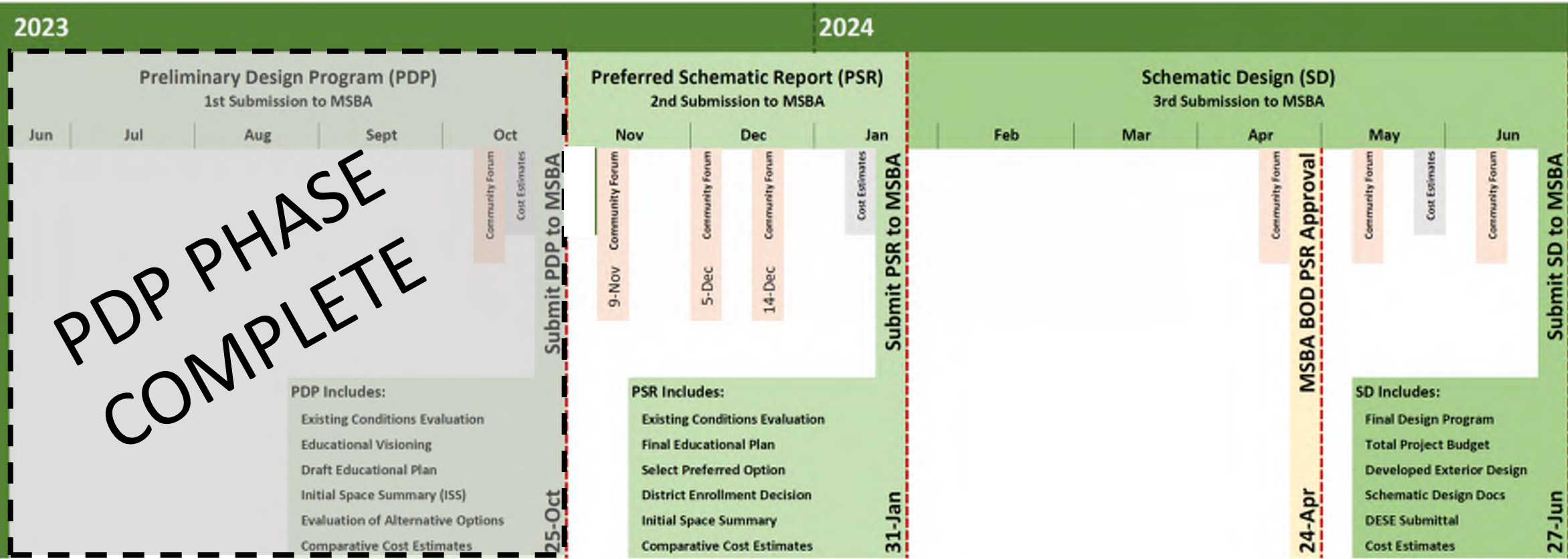
- All Contract Amendments have been committed against the original budget to indicate the remaining funds in each Budget Category
- All Invoices have been indicated in the Budget

**Committed: 74%**  
**Expended: 33%**

- Uncommitted Funds: \$512,000
- Anticipated Extra Services/ Reimbursables: \$200,000
- Remaining Funds: \$312,000

# PROJECT TIMELINE Milestones

Feasibility Study / Schematic Design Work Phase



- PDP Includes:**
- Existing Conditions Evaluation
  - Educational Visioning
  - Draft Educational Plan
  - Initial Space Summary (ISS)
  - Evaluation of Alternative Options
  - Comparative Cost Estimates

- PSR Includes:**
- Existing Conditions Evaluation
  - Final Educational Plan
  - Select Preferred Option
  - District Enrollment Decision
  - Initial Space Summary
  - Comparative Cost Estimates

- SD Includes:**
- Final Design Program
  - Total Project Budget
  - Developed Exterior Design
  - Schematic Design Docs
  - DESE Submittal
  - Cost Estimates



# CMR v. DBB PRESENTATION

CONSTRUCTION DELIVERY METHOD



## Design-Bid-Build

(M.G.L. Chapter 149)



## CM at Risk

(M.G.L. Chapter 149A)

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### GENERAL PROJECT RISKS REGARDLESS OF DELIVERY METHOD USED

- Unforeseen building or site conditions
- Incomplete architectural documents
- Poor sub-contractor performance
- Subcontractor or Trade contractor failures
- Working on and around occupied facilities
- Complex site logistics
- Adversarial team environment
- Inadequate staffing or general requirements
- Potential bid protests



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### HOW THE CM-R CAN HELP MITIGATE PROJECT RISK

- Opportunity to pre-qualify CM-R's and more specifically their teams
- Pre-construction services to address project risks
- Confirm existing conditions and provide exploratory services
- Design-to-budget process with team members
- Open book accounting
- Constructability reviews to fill in gaps in project design and detailing
- They participate in sub-contractor pre-qualification process
- Robust and comprehensive bid packages
- Options to "fast track" trades

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### PRE-CONSTRUCTION

#### CM-R

- Provides services such as cost estimating, cost saving suggestions and advice on items such as logistics, scope assignment, schedule and constructability based on real life input
- Provides input if cost estimates come in high at any point during design – CM-R works with team to develop value engineering list for pricing and consideration
- The above services is paid via a pre-construction fee. It's not free. However, the fee is typically nominal compared to the overall cost of the work.

#### Design-Bid-Build

- No input from the GC during the design phase



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### SCHEDULE / EARLY RELEASE – FAST TRACK

#### CM-R

- Ability to fast track the design/construction process via early release packages. Depending on the planned start, duration and completion of construction, this ability to fast track should be considered an “option” and not a “given”
- The advantage to fast track is that construction can commence early which can have certain benefits based on time and can hedge against potential cost inflations in the industry. The disadvantage is that the documents are subject to coordination issues and work commences without cost certainty. It is important to thoughtfully select bid packages that can stand alone and are easy to pull out of the overall project scope.

#### Design-Bid-Build

- Construction commences after bidding period and documents are complete
- Drawings are theoretically fully detailed and complete
- Due to the documents being complete, costs are certain at the time of bid opening

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### **COST AND ACCOUNTING**

#### **CM-R**

- CM includes contingency within the GMP to cover work reasonably non-inferable from the design documents. The CM contingency is transparent and use of the contingency is owner controlled
- The Owner and project team interacts with the CM to establish the GMP. However, please note that once the CM is selected at the pre-construction phase, there is a level of confidence between the Owner and CM that a mutually acceptable GMP can be reached
- Profit (or fee) and general conditions are fixed. Open book accounting is performed and any unused funds in project requirements, allowances, scope holds and CM contingency is returned to the owner
- Monthly requisition process has more detailed paperwork

#### **Design-Bid-Build**

- The GC cost of the work is highly competitive and will likely yield a lower cost up front than CM-R. However, please note that GC's objective is to maximize their profit margin
- There is no "open book" accounting. The GC's contingency is not transparent
- Monthly requisition process is simplified



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### CHANGE ORDERS AND RFI'S

#### CM-R

- There will be change orders. It has been our experience that the CO process isn't done in a "pass through" manner, the OPM, Designer, and Owner are involved in the process.
- There will be RFI's
- GMP covers work not necessarily in the documents but reasonably inferable. Thus ability for the CM to absorb costs that would otherwise be a change order

#### Design-Bid-Build

- There will be change orders
- There will be RFI's
- Due to the highly competitive nature of the lump sum bid process, change order work is pursued as "cost opportunities". Any mistakes in the bidding assumptions are typically issued as CO's

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### **ADDITIONAL FACTORS**

#### **CM-R**

- Needs to be approved by the Inspector General
- Tends to foster a team approach
- Currently is the preferred method for DCAMM projects over \$10mm
- Preferred method for other state agencies such as UMass Amherst, UMBA, and the MSCBA
- Tends to be utilized for complicated, phased or renovation projects

#### **Design-Bid-Build**

- Roles and responsibilities of the team are very clear
- Tends to be utilized on well defined, clear projects that don't have schedule constraints, occupied buildings and/or complicated phasing



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### DCAMM APPLIED SINGLE PROJECT LIMIT

As part of the DCAMM certification process, DCAMM only allows bidders to bid on projects of a certain size, based on their historic capacity to perform.

Assuming a Total Construction Cost range of \$275M - \$294M, the following firms are certified to bid on this size of a project:

- 13 total firms
- 2 DBB only firms
- 11 CMR firms
- CMR firms can also bid DBB projects

*\*Names in bold are CM-R Firms*

Company Name	Address	Single Project Limit
Clark Construction Group, LLC	Bethesda, MD	\$750M
<b>Consigli Construction Co., Inc.</b>	Milford, MA	\$414M
<b>Dimeo Construction Company</b>	Providence, RI	\$415M
<b>Gilbane Building Company</b>	Boston, MA	\$537M
J.F. White Contracting Company	Framingham, MA	\$432M
<b>LiRo Program and Construction Management, PE P.C.</b>	Syosset, NY	\$414M
<b>Shawmut Design and Construction</b>	Boston, MA	\$367M
<b>Skanska USA Building Inc.</b>	Boston, MA	\$415M
<b>Suffolk Construction Company, Inc.</b>	Boston, MA	\$1B
<b>The Whiting-Turner Contracting Company</b>	Springfield, MA	\$317M
<b>Tishman Construction Corporation</b>	Boston, MA	\$500M
<b>Turner Construction Company</b>	Boston, MA	\$826M
<b>Walsh Construction Company</b>	Chicago, IL	\$342M

# CMR v. DBB PRESENTATION

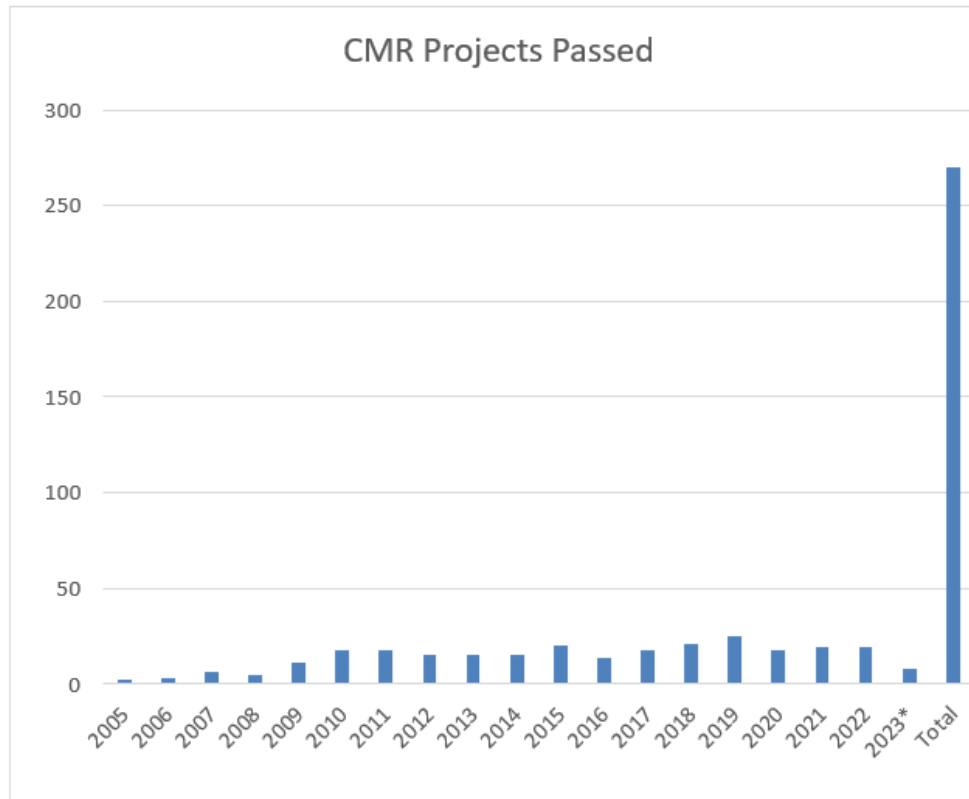
## CONSTRUCTION DELIVERY METHOD



### Massachusetts Office of the Inspector General

*Construction Manager at-Risk Project List (non-exempt entities)*

Year	CMR Projects Passed
2005	2
2006	3
2007	6
2008	5
2009	11
2010	18
2011	18
2012	15
2013	15
2014	15
2015	20
2016	14
2017	18
2018	21
2019	25
2020	18
2021	19
2022	19
2023*	8
<b>Total</b>	<b>270</b>



\* Through June of 2023.



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### CM-R PROCUREMENT – TIMELINE

#### Inspector General Application Timeline

	Event	Task
<b>Day 1</b>	<p>Awarding Authority Submits Application to Proceed (by mail) to:</p> <p>Office of the Inspector General One Ashburton Place, Room 1311 Boston, MA 02108</p>	<ul style="list-style-type: none"> <li>• Date and time stamp application</li> </ul>
<b>Day 1 – 15</b>	<ol style="list-style-type: none"> <li>1. OIG reviews application in a timely manner.</li> <li>2. OIG contacts applicant acknowledging receipt of the application</li> </ol>	<ul style="list-style-type: none"> <li>• Review application</li> </ul>
<b>Day 1-60</b>	<ol style="list-style-type: none"> <li>1. OIG determines whether additional information is necessary and if so, requests awarding authority to send information</li> <li>2. OIG reviews application to determine whether awarding authority meets requirements and will be issued a Notice to Proceed</li> <li>3. OIG sends Notice to Proceed or Denial of Notice to Proceed</li> </ol>	<ul style="list-style-type: none"> <li>• Verify information</li> <li>• Request more information, if necessary</li> <li>• Analyze credentials based on evaluation criteria;</li> <li>• Complete review and issue determination</li> </ul>

# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### SST TIMELINE FOR CM-R PROCUREMENT

- 12/14/23 - SST SBC approves CM-R Method
- 12/31/23 - LeftField submits application to OIG
- January – Solicit and Review Qualifications Packages
- February – Invite qualified CM-Rs to submit Proposals
- March – Host Interviews
- Mid-March – Select a CM-R
- April – CM-R on board, working with team on logistics, schedule, and reviewing documents
- May – CM-R prepares project estimate (along with DRA and LF estimators)

### SST AVAILABLE FUNDS

- Uncommitted Funds Sufficient
- \$312,000 Feasibility Study Contingency
- Expected CM-R Feasibility Pre-Con Fee range: \$50,000 to \$70,000

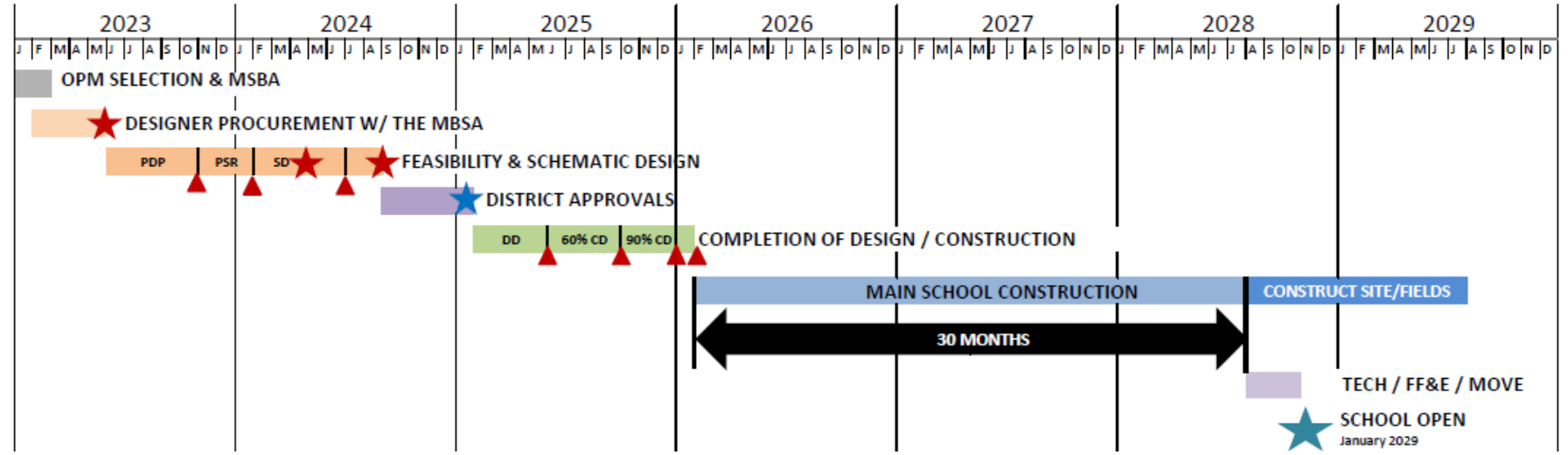


# CMR v. DBB PRESENTATION

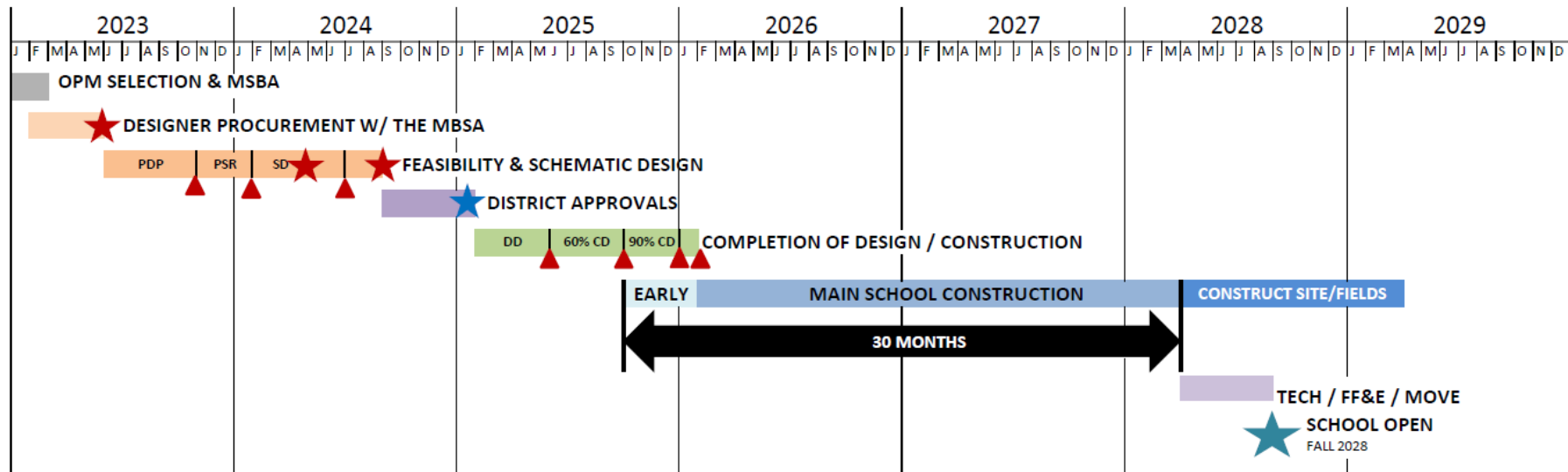
## CONSTRUCTION DELIVERY METHOD



### New Construction Options Design Bid Build



### New Construction Options CM at-Risk



# CMR v. DBB PRESENTATION

## CONSTRUCTION DELIVERY METHOD



### **SUGGESTED VOTE:**

**SBC would like to proceed with a Construction Manager at-Risk procurement method and approve LeftField to proceed with submitting the application to the Inspector General's Office**

**OR**

**SBC would like to proceed with Design Bid Build procurement method**



# Status Updates

## Site Development Requirements

### Key issues

- Vehicular Circulation, Bus & Car Access
- Parking requirements
- Athletic Fields & support spaces
  - **Softball, Baseball, Football/MP, Track**
- Outdoor Learning opportunities
- Utilities
- Outbuildings
- Adjacent Property

Enrollments:	existing	805	900
Staff: (Admin & Teachers):	130	160	175
Approx. 2/3 of seniors:	108	134	150
Approx. 1/3 of juniors:	53	66	74
Visitors:	20	24	27
<b>TOTAL Parking Spaces:</b>	<b>311</b>	<b>384</b>	<b>426</b>
<i>Bus parking (one bus = 4 cars)</i>	<i>12</i>	<i>15</i>	<i>17</i>

# Preliminary Options

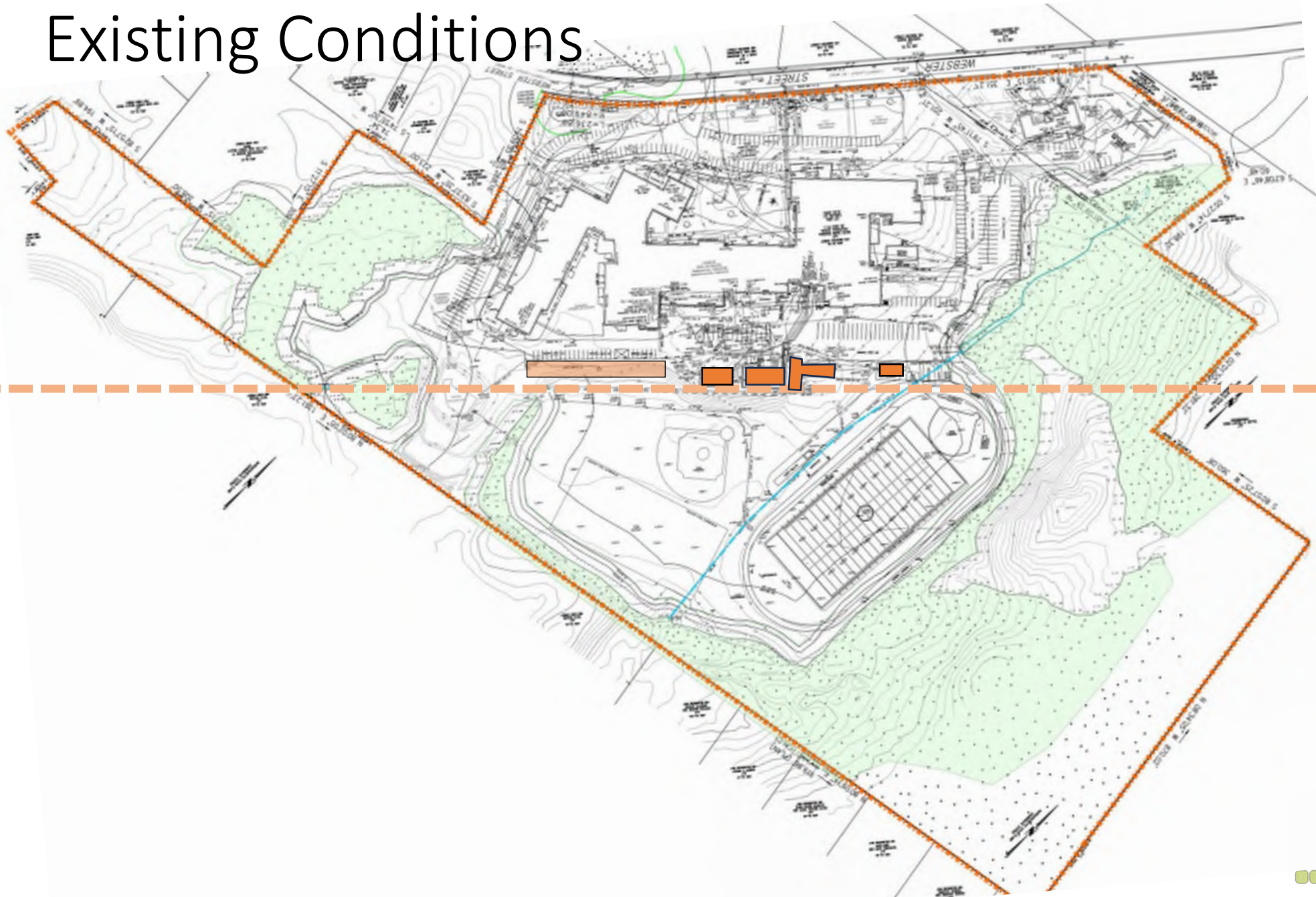


## Site Options

- Options 1 - 5



# Existing Conditions





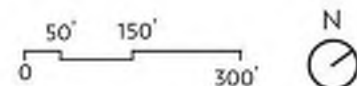
# EXISTING SITE



## LEGEND

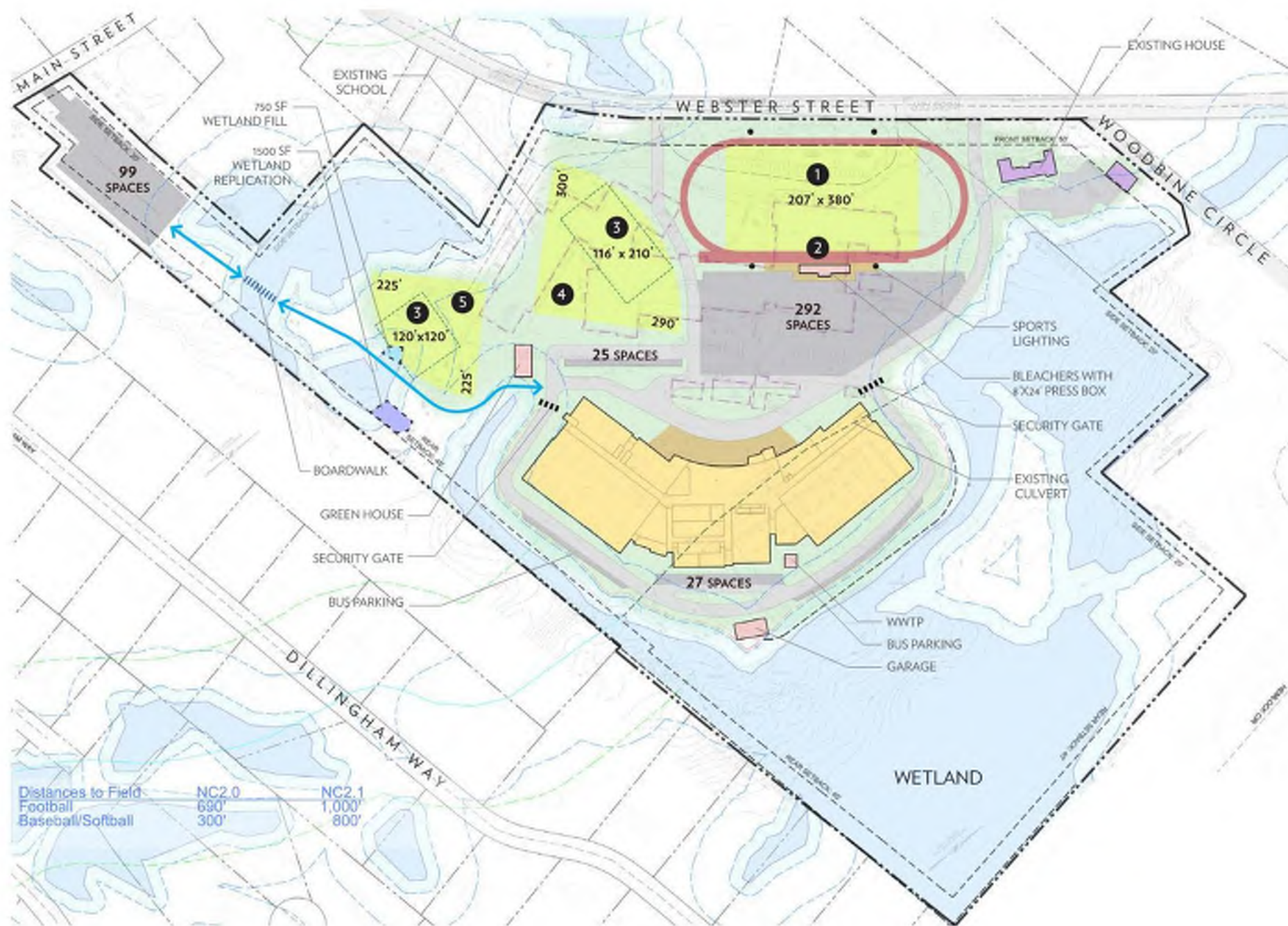
-  EXISTING STRUCTURES
-  ATHLETICS
-  WETLAND
-  35' WETLAND BUFFER
-  SECURITY GATE
-  1 MULTI-PURPOSE FIELD
-  2 RUNNING TRACK
-  3 SOFTBALL
-  4 BASEBALL
-  5 PRACTICE FIELD

**TOTAL EXISTING PARKING:**  
304 SPACES & 15 BUS SPACES (SCHOOL)  
20 SPACES (HOUSE)





# OPTION 1



## LEGEND

- EXISTING STRUCTURES
- PROPOSED STRUCTURES
- NEW SCHOOL
- ATHLETICS
- ENTRY PLAZA
- WETLAND
- 35' WETLAND BUFFER
- SECURITY GATE
- 1 SYNTHETIC TURF MULTI-PURPOSE FIELD
- 2 RUNNING TRACK
- 3 PRACTICE FIELD
- 4 BASEBALL
- 5 SOFTBALL

## TOTAL PARKING:

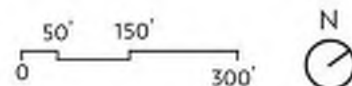
EXISTING: 304 SPACES  
& 15 BUS SPACES

PROPOSED: 344 SPACES (9'x18')  
TARGET: 426 SPACES

ADDITIONAL:  
99 SPACES (MAIN ST.)  
20 SPACES (EX. HOUSE)

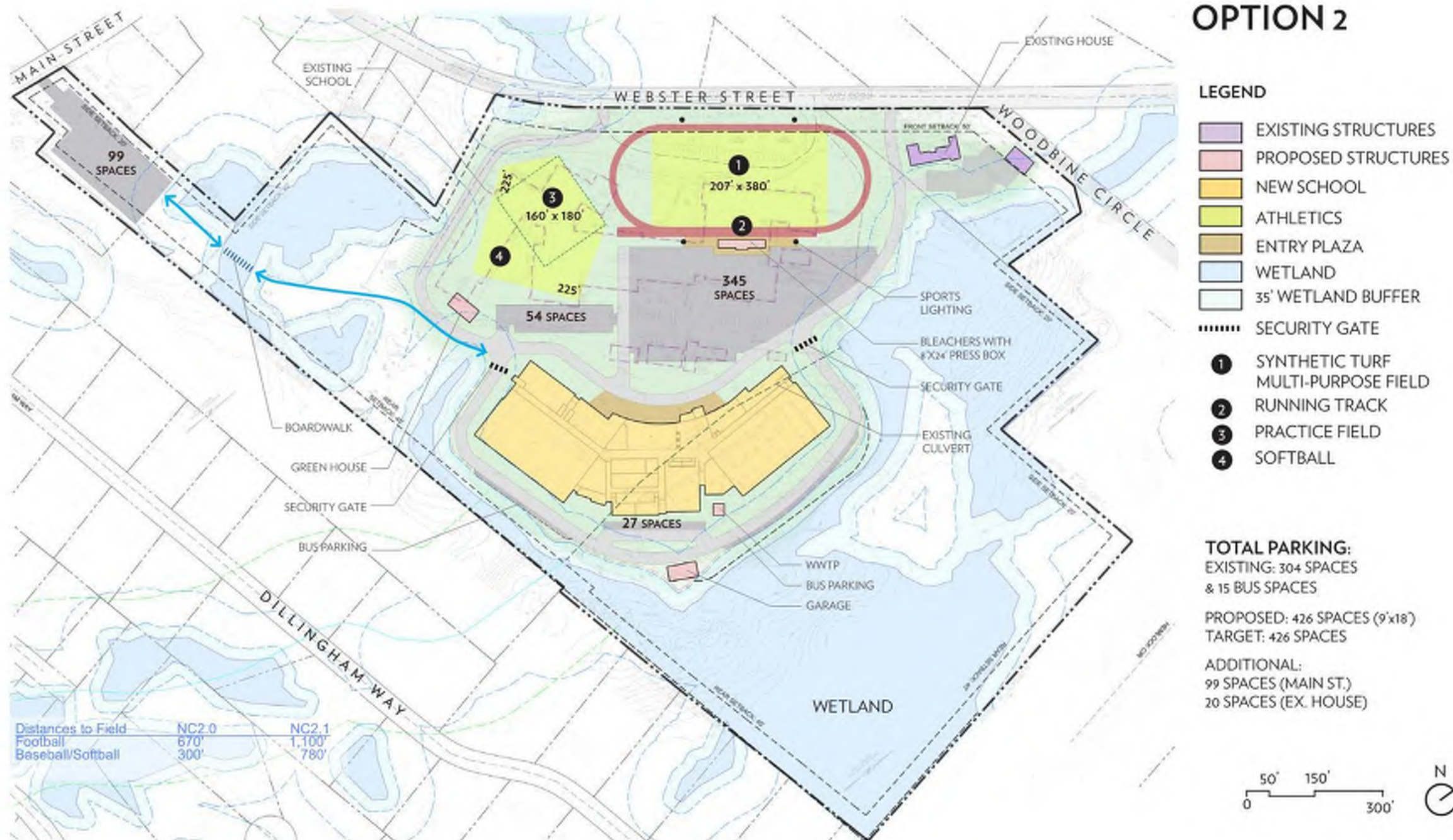
Distances to Field

	NC2.0	NC2.1
Football	690'	1,000'
Baseball/Softball	300'	800'



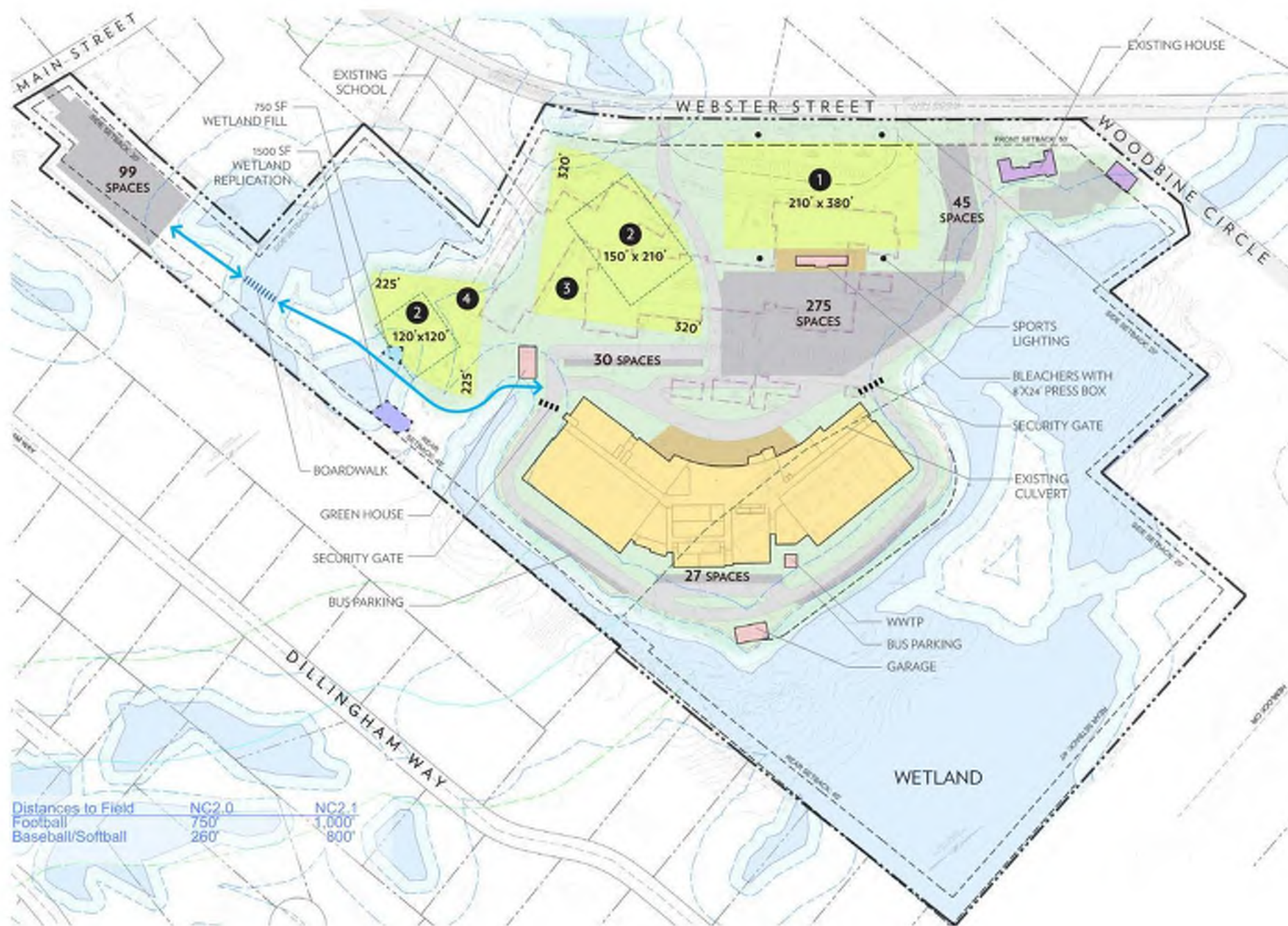


## OPTION 2





# OPTION 3



## LEGEND

- EXISTING STRUCTURES
- PROPOSED STRUCTURES
- NEW SCHOOL
- ATHLETICS
- ENTRY PLAZA
- WETLAND
- 35' WETLAND BUFFER
- SECURITY GATE
- 1 SYNTHETIC TURF MULTI-PURPOSE FIELD
- 2 PRACTICE FIELD
- 3 BASEBALL
- 4 SOFTBALL

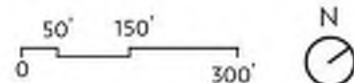
## TOTAL PARKING:

EXISTING: 304 SPACES  
& 15 BUS SPACES

PROPOSED: 377 SPACES (9'x18')  
TARGET: 426 SPACES

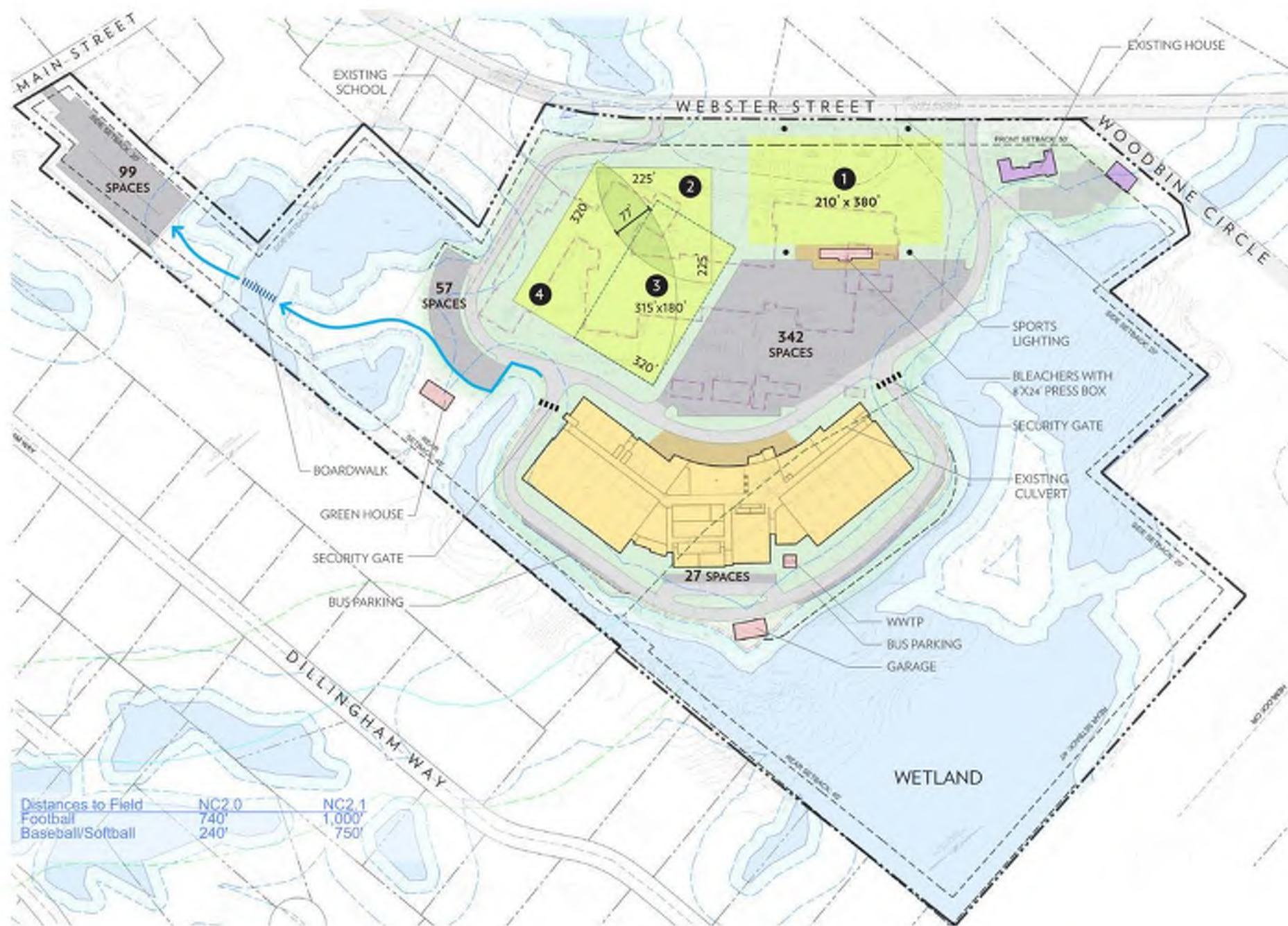
ADDITIONAL:  
99 SPACES (MAIN ST.)  
20 SPACES (EX. HOUSE)

Distances to Field	NC2.0	NC2.1
Football	750'	1,000'
Baseball/Softball	260'	800'





# OPTION 4



## LEGEND

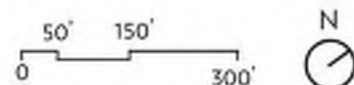
- EXISTING STRUCTURES
- PROPOSED STRUCTURES
- NEW SCHOOL
- ATHLETICS
- ENTRY PLAZA
- WETLAND
- 35' WETLAND BUFFER
- SECURITY GATE
- 1 SYNTHETIC TURF MULTI-PURPOSE FIELD
- 2 SOFTBALL
- 3 PRACTICE FIELD
- 4 BASEBALL

## TOTAL PARKING:

EXISTING: 304 SPACES  
& 15 BUS SPACES

PROPOSED: 426 SPACES (9'x18')  
TARGET: 426 SPACES

ADDITIONAL:  
99 SPACES (MAIN ST.)  
20 SPACES (EX. HOUSE)





# OPTION 5

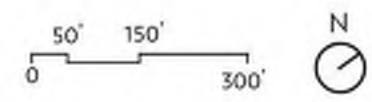


## LEGEND

- EXISTING STRUCTURES
- PROPOSED STRUCTURES
- NEW SCHOOL
- ATHLETICS
- ENTRY PLAZA
- WETLAND
- 35' WETLAND BUFFER
- SECURITY GATE
- 1 BASEBALL
- 2 PRACTICE FIELD
- 3 SOFTBALL
- 4 SYNTHETIC TURF MULTI-PURPOSE FIELD

**TOTAL PARKING:**  
 EXISTING: 304 SPACES & 15 BUS SPACES  
 PROPOSED: 426 SPACES (9'x18')  
 TARGET: 426 SPACES  
 ADDITIONAL:  
 17 SPACES (MAIN ST.)  
 20 SPACES (EX. HOUSE)

Distances to Field	NC 2.0	NC 2.1
Football	400'	860'
Baseball/Softball	680'	1,000'





Issue	Questions	Option 1	Option 2 former 4A	Option 3 former 2	Option 4 former 4B	Option 5 former 5B	
PARKING	Parking Spaces with target of 426 for 900 students (assumes 9'x18' spaces (not 10'x20'), does not include 99 maybe on Main St or 25 maybe near house)	358/426 84%	433/426 100% +	377/426 89%	443/426 100% +	426/426 100%	
	Where can we park the buses	at rear of school; possible at side if Elec shop is relocated	at rear of school; possible at side if Elec shop is relocated	at rear of school; possible at side if Elec shop is relocated	at rear of school; possible at side if Elec shop is relocated	at rear of school; possible at side if Elec shop is relocated	
HOUSE	House remains	Yes	Yes	Yes	Yes	Yes	
FIELD AND TRACK	Multipurpose synthetic field for FB, Soccer, Lac	Location	Webster	Webster	Webster	Webster	Left side
		Track	Yes	Yes	No	No	No
BASEBALL AND SOFTBALL FIELDS	Separate baseball field	Yes, reduced size	No BB field on campus	Yes	Yes, overlapping outfields	Yes	
	Separate softball field	Yes	Yes	Yes	Yes, overlapping outfields	Yes	
	BB field orientation	BB faces Webster	No BB field on campus	BB faces Webster	BB faces Webster	BB faces Dillingham	
	SB field orientation	SB faces Dillingham	SB faces Webster	SB faces Dillingham	SB faces Dillingham	SB faces Webster	
PRACTICE FIELDS	"Extra" practice field on campus outside any established field?	No	No	No	No	No	
	Can we use baseball and/or softball outfield space for other sports to practice?	Yes but BB field is smaller (300')	Yes	Yes	Yes, larger overlapping outfields	Yes, larger overlapping outfields	
ENTRANCE	Are there obstacles when viewing school from Webster Street entrance?	None	None	None	SB backstop	SB backstop	
TRAFFIC FLOW	How easy is it for cars to journey from Webster to school?	Tight between BB and Track; awkward turn to approach school via parking area	circutious entrance to smooth drop-off using existing driveway near '92 addition, immediately available for 1st year; smoother than options 1, 3	Tight between BB and Track; awkward turn to approach school via parking area	circutious entrance to smooth drop-off using existing driveway near '92 addition, immediately available for 1st year; smoother than options 1, 3	direct entrance, smooth route to drop-off. Requires temporary use of existing access for first year.	
IMPACT ON ABUTTERS	Do proposed activites negatively impact abutters?	Field lights, Friday night games on Webster St.	Field lights, Friday night games on Webster St. Driveway traffic along west property line.	Field lights, Friday night games on Webster St.	Field lights, Friday night games on Webster St. Driveway traffic along west property line.	Field lights, Friday night games along west property line	



# Preliminary Options



## New Construction Options

- NC-2.0 “Linear”
- NC-2.1 “Linear/ Center core”

# NC 2.0 900 students



First Floor Plan





# NC 2.0 900 students



Second Floor Plan



# NC 2.0 900 students



Third Floor Plan

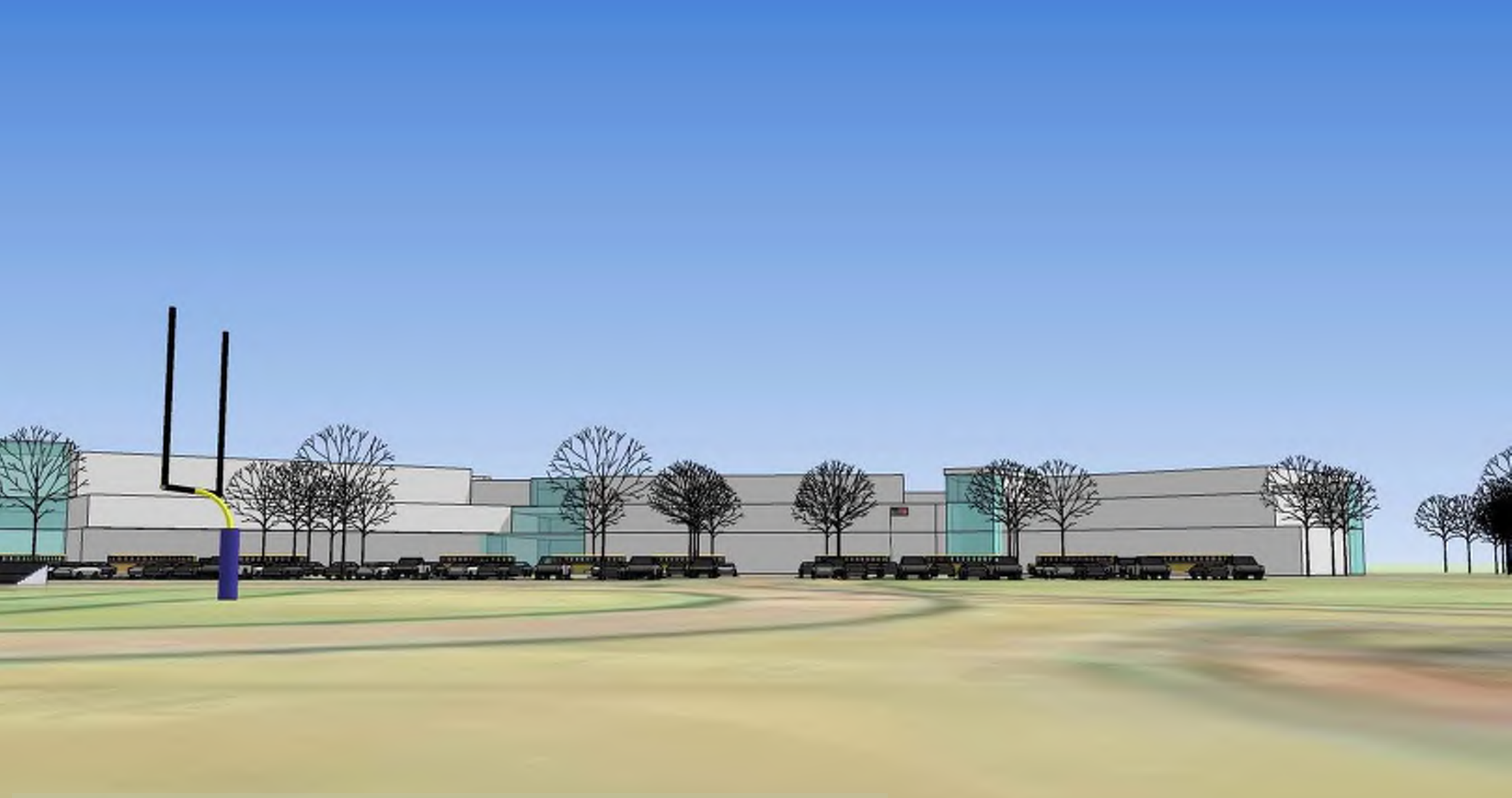






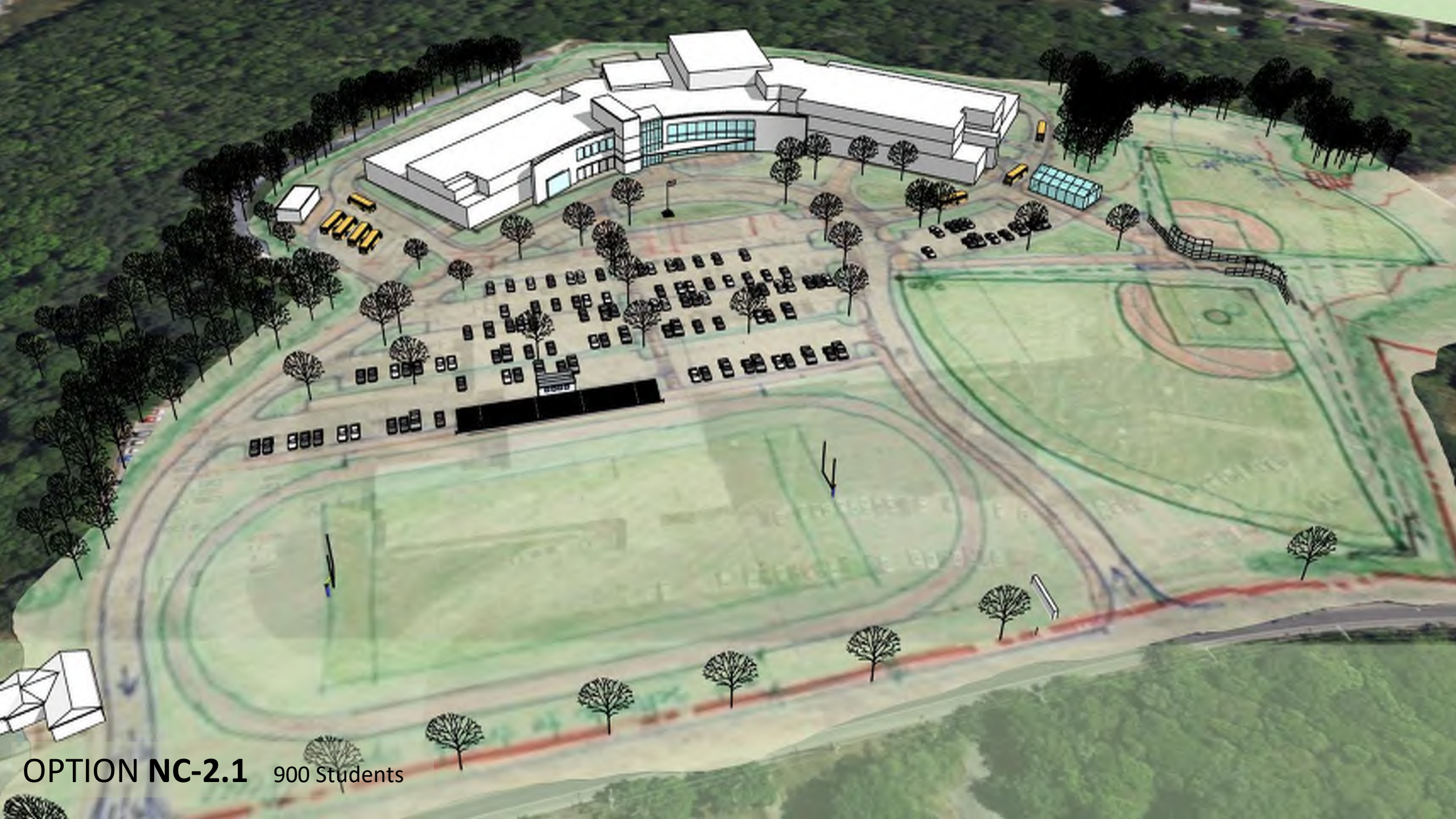
**OPTION NC-2.0** 900 Students





**OPTION NC-2.0** 900 Students View from Webster Street





**OPTION NC-2.1** 900 Students





OPTION **NC-2.1** 900 Students View from Webster Street



# Discussion

School Building Committee

December 14, 2023



100  
YEARS

DRA

# Thank you!

*Please note:*

Upcoming Community Meetings:

November 9	Marshfield Town Hall	6 pm
December 5	Rockland Senior Center	7 pm
December 14	Whitman Town Hall	7 pm

School Building Committee

December 14, 2023



**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT**  
**436 Webster Street, Hanover, MA 02339**  
**JOINT MEETING OF**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL COMMITTEE**  
**AND**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE**  
**Wednesday, January 17, 2024 – 6:00PM**

**AGENDA**

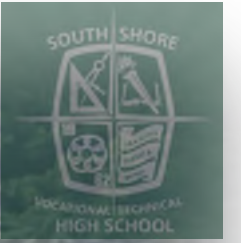
1. **Call to Order of the School Committee and the School Building Committee**
2. **Pledge of Allegiance**
3. **Moment of Silence for former Norwell Representative Robert L. Molla, Jr.**
4. **Agenda Items for the School Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Student Recognition – Stella Glykis, Gr. 12 Culinary, Hanover
  - d. Staff Spotlight – Metal Fabrication/Welding Program Instructors
  - e. Student Advisory – Lily McGann
  - f. Reports
    - 1) Treasurer
      - a) Monthly Report **(Vote)**
      - b) Other Updates
    - 2) Superintendent-Director
      - a) MSBA Update
      - b) FY25 Budget
      - c) Future Subcommittee Work
    - 3) Administrator Reports
  - g. New Business
    - 1) Approve Revised Educational Plan **(Vote)**
    - 2) Authorization to Pursue Five-Year Bus Lease **(Vote)**
  - h. Request for Action
  - i. Adjourn School Committee Meeting **(Vote)**
5. **Agenda Items for the School Building Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Project Approvals:
    - 1) Approve Minutes from December 14, 2023 School Building Committee Meeting **(Vote)**
    - 2) Approve Invoices – LeftField and DRA Architects **(Vote)**
  - d. Feasibility Study Budget Update
  - e. Cost Estimate and Evaluation Matrix Review
    - 1) Possible Vote to Select Preferred Option and /or Preferred Enrollment **(Vote)**
  - f. Adjourn School Building Committee meeting **(Vote)**

Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted January 11, 2024*

# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

January 17, 2024



100  
YEARS

DRA



# AGENDA



## Agenda Items for the School Building Committee

1. Agenda Adjustments
2. Public Comment
3. Project Approvals:
  - Approve Minutes from December 14, 2023 School Building Committee Meeting (Vote)
  - Approve Invoices – LeftField and DRA Architects (Vote)
4. Feasibility Study Budget Update
5. Cost Estimate and Evaluation Matrix Review
6. Possible Vote to Select Preferred Option and /or Preferred Enrollment (Vote)
7. Adjourn

# MEETING MINUTES



## **SUGGESTED VOTE:**

**Vote to approve meeting minutes from the December 14, 2023 SBC Meeting**



# INVOICES



- Project Invoices - **TOTAL \$56,500.00**

INVOICES						
ProPay Code	Invoice Date	Vendor	Invoice #	Budget Category	Description of Services	Invoice \$
0001-0000	12/31/23	LeftField, LLC	9	OPM – Feasibility Study/ Schematic Design	OPM Feasibility Study Services December 1 – December 31, 2023	\$29,000.00
0002-0000	12/31/23	DRA	5	A/E - Feasibility Study/ Schematic Design	A/E Feasibility Study Services December 1 – December 31, 2023	\$27,500.00
					<b>TOTAL:</b>	<b>\$56,500.00</b>

# BUDGET UPDATE



South Shore Regional Vocational Technical High School - Hanover, MA									
Total Project Budget Status Report									
ProPay Code	Description	Total Project Budget	Authorized Changes	Revised Total Budget	Total Committed	% Cmtd to Date	Actual Spent to Date	% Spent to Date	Balance To Spend
<b>FEASIBILITY STUDY AGREEMENT</b>									
0001-0000	OPM Feasibility Study/Schematic Design	\$ 400,000	\$28,050	\$ 428,050	\$ 428,050	100%	\$ 227,000	53%	\$ 201,050
0002-0000	A&E Feasibility Study/Schematic Design	\$ 1,100,000		\$ 1,100,000	\$ 1,059,950	96%	\$ 481,861	44%	\$ 618,139
0003-0000	Environmental & Site	\$ 300,000		\$ 300,000	\$ -	0%	\$ -	0%	\$ 300,000
0004-0000	Other	\$ 200,000	\$ (28,050)	\$ 171,950	\$ -	0%	\$ -	0%	\$ 171,950
	<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,488,000</b>	<b>74%</b>	<b>\$ 708,861</b>	<b>35%</b>	<b>\$ 1,291,139</b>
	<b>TOTAL PROJECT BUDGET</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,488,000</b>	<b>74%</b>	<b>\$ 708,861</b>	<b>35%</b>	<b>\$ 1,291,139</b>

- All Contract Amendments have been committed against the original budget to indicate the remaining funds in each Budget Category
- All Invoices have been indicated in the Budget

**Committed: 74%**  
**Expended: 35%**

- Uncommitted Funds: \$512,000
- Anticipated Extra Services/ Reimbursables: \$200,000

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- Remaining Funds: \$312,000



# PSR COST COMPARISON



Design	805 enrollment		900 enrollment	
	Initial total estimate	Revised total estimate	Initial total estimate	Revised total estimate
New construction (NC 2.0) "Linear"	<del>\$344.1m</del>	\$266m-\$287m	<del>\$367.9m</del>	\$278m-\$299m
New construction (NC 2.1) "Linear/center core"	<del>\$344.1m</del>	\$263m-\$303m	<del>\$367.9m</del>	\$281m-\$308m
Add/Reno (AR-1) "L shaped"	<del>\$349.8m</del>	\$256m-\$267m	<del>\$366.7m</del>	\$271m-\$282m

# PSR COST COMPARISON



Student Enrollment Range: 805 - 900 Students	805 Students NC 2.0			900 Students NC 2.0			Avg Delta Between Enrollments
	Ellana	AM Fogarty	Delta	Ellana	AM Fogarty	Delta	
A Substructure	\$ 12,242,383	\$ 6,115,027	\$ 6,127,356	\$ 12,958,789	\$ 6,404,908	\$ 6,553,881	\$ 503,143.50
B Shell	\$ 46,915,068	\$ 36,684,412	\$ 10,230,656	\$ 47,009,960	\$ 38,677,626	\$ 8,332,334	\$ 1,044,053.00
C Interiors	\$ 26,345,845	\$ 25,950,924	\$ 394,921	\$ 28,378,810	\$ 27,279,246	\$ 1,099,564	\$ 1,680,643.50
D Services	\$ 40,996,423	\$ 42,261,445	\$ (1,265,022)	\$ 44,231,245	\$ 45,568,749	\$ (1,337,504)	\$ 3,271,063.00
E Fittings & Fixed Equipment	\$ 6,805,088	\$ 6,565,975	\$ 239,113	\$ 7,267,675	\$ 6,801,957	\$ 465,718	\$ 349,284.50
F Special Construction & Demolition	\$ 3,355,630	\$ 2,861,590	\$ 494,040	\$ 3,355,630	\$ 2,861,590	\$ 494,040	\$ -
G Sitework	\$ 20,848,301	\$ 23,690,007	\$ (2,841,706)	\$ 20,722,301	\$ 23,748,987	\$ (3,026,686)	\$ (33,510.00)
Greenhouse	\$ 720,000	\$ 720,000	\$ -	\$ 720,000	\$ 720,000	\$ -	\$ -
Waste Water Treatment Plant	\$ 4,000,000	\$ 4,200,000	\$ (200,000)	\$ 4,000,000	\$ 4,200,000	\$ (200,000)	\$ -
Maintenance Garage	\$ 540,000	\$ 540,000	\$ -	\$ 540,000	\$ 540,000	\$ -	\$ -
Concession Stand	\$ 270,000	\$ 268,800	\$ 1,200	\$ 270,000	\$ 268,800	\$ 1,200	\$ -
<b>TOTAL DIRECT COSTS</b>	<b>\$ 163,038,738</b>	<b>\$ 149,858,180</b>	<b>\$ 13,180,558</b>	<b>\$ 169,454,410</b>	<b>\$ 157,071,863</b>	<b>\$ 12,382,547</b>	<b>\$ 6,814,678</b>
Design & Estimating Contingency	\$ 19,565,000	\$ 17,985,285	\$ 1,579,715	\$ 20,335,000	\$ 18,850,927	\$ 1,484,073	\$ 817,821.00
General Conditions	\$ 8,423,000	\$ 7,000,000	\$ 1,423,000	\$ 8,755,000	\$ 7,000,000	\$ 1,755,000	\$ 166,000.00
General Requirements	\$ 7,487,000	\$ 5,749,468	\$ 1,737,532	\$ 7,782,000	\$ 6,016,086	\$ 1,765,914	\$ 280,809.00
Insurances + Bonds	\$ 3,931,000	\$ 3,947,968	\$ (16,968)	\$ 4,086,000	\$ 4,131,045	\$ (45,045)	\$ 169,038.50
CM Fee (Overhead & Profit)	\$ 4,680,000	\$ 5,033,659	\$ (353,659)	\$ 4,864,000	\$ 5,267,083	\$ (403,083)	\$ 208,712.00
CM GMP Contingency	\$ 4,565,100	\$ 6,191,401	\$ (1,626,301)	\$ 4,744,800	\$ 6,478,512	\$ (1,733,712)	\$ 233,405.50
Modular Classrooms			\$ -			\$ -	\$ -
Phasing / Scheduling Premium			\$ -			\$ -	\$ -
Escalation	\$ 18,261,000	\$ 16,786,266	\$ 1,474,734	\$ 18,979,000	\$ 17,594,199	\$ 1,384,801	\$ 762,966.50
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$ 229,950,838</b>	<b>\$ 212,552,227</b>	<b>\$ 17,398,611</b>	<b>\$ 239,000,210</b>	<b>\$ 222,409,715</b>	<b>\$ 16,590,495</b>	<b>\$ 9,453,430</b>
Soft Costs Calculated at 25%	\$ 57,487,710	\$ 53,138,057	\$ 4,349,653	\$ 59,750,053	\$ 55,602,429	\$ 4,147,624	\$ 2,363,357.50
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$ 287,438,548</b>	<b>\$ 265,690,284</b>	<b>\$ 21,748,264</b>	<b>\$ 298,750,263</b>	<b>\$ 278,012,144</b>	<b>\$ 20,738,119</b>	<b>\$ 11,816,788</b>

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.



# PSR COST COMPARISON



Student Enrollment Range: 805 - 900 Students	805 Students NC 2.1			900 Students NC 2.1			Avg Delta Between Enrollments
	Ellana	AM Fogarty	Delta	Ellana	AM Fogarty	Delta	
A Substructure	\$ 15,107,086	\$ 7,464,252	\$ 7,642,834	\$ 14,043,262	\$ 7,496,821	\$ 6,546,441	\$ (515,627.50)
B Shell	\$ 49,230,152	\$ 37,384,619	\$ 11,845,533	\$ 50,396,793	\$ 38,758,688	\$ 11,638,105	\$ 1,270,355.00
C Interiors	\$ 26,757,290	\$ 26,237,982	\$ 519,308	\$ 28,726,379	\$ 27,553,921	\$ 1,172,458	\$ 1,642,514.00
D Services	\$ 41,533,732	\$ 42,810,793	\$ (1,277,061)	\$ 44,766,024	\$ 46,115,510	\$ (1,349,486)	\$ 3,268,504.50
E Fittings & Fixed Equipment	\$ 6,870,380	\$ 6,604,666	\$ 265,714	\$ 7,332,660	\$ 6,832,829	\$ 499,831	\$ 345,221.50
F Special Construction & Demolition	\$ 3,355,630	\$ 2,861,590	\$ 494,040	\$ 3,355,630	\$ 2,861,590	\$ 494,040	\$ -
G Sitework	\$ 24,722,301	\$ 17,557,811	\$ 7,164,490	\$ 20,722,301	\$ 23,292,321	\$ (2,570,020)	\$ 867,255.00
Greenhouse	\$ 720,000	\$ 720,000	\$ -	\$ 720,000	\$ 720,000	\$ -	\$ -
Waste Water Treatment Plant	\$ 4,000,000	\$ 4,200,000	\$ (200,000)	\$ 4,000,000	\$ 4,200,000	\$ (200,000)	\$ -
Maintenance Garage	\$ 540,000	\$ 540,000	\$ -	\$ 540,000	\$ 540,000	\$ -	\$ -
Concession Stand	\$ 270,000	\$ 268,800	\$ 1,200	\$ 270,000	\$ 268,800	\$ 1,200	\$ -
<b>TOTAL DIRECT COSTS</b>	<b>\$ 173,106,571</b>	<b>\$ 146,650,513</b>	<b>\$ 26,456,058</b>	<b>\$ 174,873,049</b>	<b>\$ 158,640,480</b>	<b>\$ 16,232,569</b>	<b>\$ 6,878,223</b>
Design & Estimating Contingency	\$ 20,293,000	\$ 18,287,822	\$ 2,005,178	\$ 20,985,000	\$ 19,039,161	\$ 1,945,839	\$ 721,669.50
General Conditions	\$ 8,737,000	\$ 7,000,000	\$ (8,331,634)	\$ 9,034,000	\$ 7,000,000	\$ 2,034,000	\$ 148,500.00
General Requirements	\$ 7,766,000	\$ 5,842,649	\$ 1,923,351	\$ 8,031,000	\$ 6,074,062	\$ 1,956,938	\$ 248,206.50
Insurances + Bonds	\$ 4,078,000	\$ 4,011,952	\$ 66,048	\$ 4,217,000	\$ 4,170,856	\$ 46,144	\$ 148,952.00
CM Fee (Overhead & Profit)	\$ 4,854,000	\$ 5,115,239	\$ (261,239)	\$ 5,019,000	\$ 5,317,841	\$ (298,841)	\$ 183,801.00
CM GMP Contingency	\$ 4,735,000	\$ 6,291,744	\$ (1,556,744)	\$ 4,896,500	\$ 6,540,944	\$ (1,644,444)	\$ 205,350.00
Modular Classrooms			\$ -			\$ -	\$ -
Phasing / Scheduling Premium			\$ -			\$ -	\$ -
Escalation	\$ 18,940,000	\$ 17,068,634	\$ 1,871,366	\$ 19,586,000	\$ 17,769,884	\$ 1,816,116	\$ 673,625.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$ 242,509,571</b>	<b>\$ 210,268,553</b>	<b>\$ 32,241,018</b>	<b>\$ 246,641,549</b>	<b>\$ 224,553,228</b>	<b>\$ 22,088,321</b>	<b>\$ 9,208,327</b>
Soft Costs Calculated at 25%	\$ 60,627,393	\$ 52,567,138	\$ 8,060,255	\$ 61,660,387	\$ 56,138,307	\$ 5,522,080	\$ 2,302,081.63
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$ 303,136,964</b>	<b>\$ 262,835,691</b>	<b>\$ 40,301,273</b>	<b>\$ 308,301,936</b>	<b>\$ 280,691,535</b>	<b>\$ 27,610,401</b>	<b>\$ 11,510,408</b>

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.

# PSR COST COMPARISON



Student Enrollment Range: 805 - 900 Students	805 Students AR 01			900 Students AR 01			Avg Delta Between Enrollments
	Ellana	AM Fogarty	Delta	Ellana	AM Fogarty	Delta	
A Substructure	\$ 6,372,268	\$ 4,493,243	\$ 1,879,025	\$ 7,053,822	\$ 4,763,075	\$ 2,290,747	\$ 475,693.00
B Shell	\$ 32,692,512	\$ 27,525,219	\$ 5,167,293	\$ 35,960,918	\$ 30,106,770	\$ 5,854,148	\$ 2,924,978.50
C Interiors	\$ 24,512,879	\$ 24,422,721	\$ 90,158	\$ 26,281,173	\$ 27,938,379	\$ (1,657,206)	\$ 2,641,976.00
D Services	\$ 40,681,797	\$ 39,441,127	\$ 1,240,670	\$ 43,833,113	\$ 42,097,804	\$ 1,735,309	\$ 2,903,996.50
E Fittings & Fixed Equipment	\$ 6,766,855	\$ 7,508,410	\$ (741,555)	\$ 7,219,295	\$ 7,709,116	\$ (489,821)	\$ 326,573.00
F Special Construction & Demolition	\$ 4,469,670	\$ 1,967,920	\$ 2,501,750	\$ 4,469,670	\$ 1,967,920	\$ 2,501,750	\$ -
G Sitework	\$ 19,120,566	\$ 22,680,663	\$ (3,560,097)	\$ 18,251,103	\$ 22,725,053	\$ (4,473,950)	\$ (412,536.50)
Greenhouse	\$ 720,000	\$ 720,000	\$ -	\$ 720,000	\$ 720,000	\$ -	\$ -
Waste Water Treatment Plant	\$ 4,000,000	\$ 4,200,000	\$ (200,000)	\$ 4,000,000	\$ 4,200,000	\$ (200,000)	\$ -
Maintenance Garage	\$ 540,000	\$ 540,000	\$ -	\$ 540,000	\$ 540,000	\$ -	\$ -
Concession Stand	\$ 270,000	\$ 268,800	\$ 1,200	\$ 270,000	\$ 268,800	\$ 1,200	\$ -
<b>TOTAL DIRECT COSTS</b>	<b>\$ 140,146,547</b>	<b>\$ 133,768,103</b>	<b>\$ 6,378,444</b>	<b>\$ 148,599,094</b>	<b>\$ 143,036,917</b>	<b>\$ 5,562,177</b>	<b>\$ 8,860,681</b>
Design & Estimating Contingency	\$ 16,818,000	\$ 16,238,933	\$ 579,067	\$ 17,832,000	\$ 17,164,429	\$ 667,571	\$ 969,748.00
General Conditions	\$ 8,199,000	\$ 9,100,000	\$ (901,000)	\$ 8,666,000	\$ 9,100,000	\$ (434,000)	\$ 233,500.00
General Requirements	\$ 7,768,000	\$ 5,274,592	\$ 2,493,408	\$ 8,210,000	\$ 5,559,644	\$ 2,650,356	\$ 363,526.00
Insurances + Bonds	\$ 3,626,000	\$ 3,621,886	\$ 4,114	\$ 3,832,000	\$ 3,817,622	\$ 14,378	\$ 200,868.00
CM Fee (Overhead & Profit)	\$ 4,316,000	\$ 4,617,905	\$ (301,905)	\$ 4,561,000	\$ 4,867,469	\$ (306,469)	\$ 247,282.00
CM GMP Contingency	\$ 4,209,900	\$ 5,680,023	\$ (1,470,123)	\$ 4,449,600	\$ 5,986,986	\$ (1,537,386)	\$ 273,331.50
Modular Classrooms	\$ 9,350,000	\$ 9,350,000	\$ -	\$ 9,350,000	\$ 9,350,000	\$ -	\$ -
Phasing / Scheduling Premium	\$ 2,080,000	\$ 1,672,101	\$ 407,899	\$ 2,200,000	\$ 1,787,961	\$ 412,039	\$ 117,930.09
Escalation	\$ 16,840,000	\$ 15,156,338	\$ 1,683,662	\$ 17,799,000	\$ 16,020,134	\$ 1,778,866	\$ 911,398.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	<b>\$ 213,353,447</b>	<b>\$ 204,479,881</b>	<b>\$ 8,873,566</b>	<b>\$ 225,498,694</b>	<b>\$ 216,691,162</b>	<b>\$ 8,807,532</b>	<b>\$ 12,178,264</b>
Soft Costs Calculated at 25%	\$ 53,338,362	\$ 51,119,970	\$ 2,218,391	\$ 56,374,674	\$ 54,172,791	\$ 2,201,883	\$ 3,044,566.02
<b>TOTAL ESTIMATED PROJECT COSTS</b>	<b>\$ 266,691,809</b>	<b>\$ 255,599,852</b>	<b>\$ 11,091,957</b>	<b>\$ 281,873,368</b>	<b>\$ 270,863,953</b>	<b>\$ 11,009,414</b>	<b>\$ 15,222,830</b>

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.



# EVALUATION MATRIX



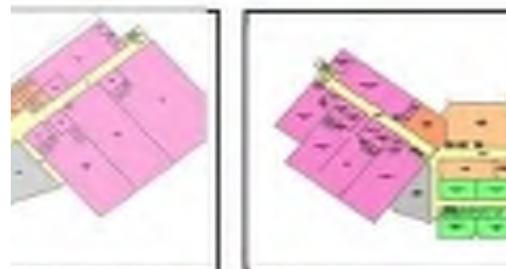
- AR.1 –  
Addition/Renovation



- NC.2.0 –  
New Construction - Linear



- NC.2.1 –  
New Construction – Central Core

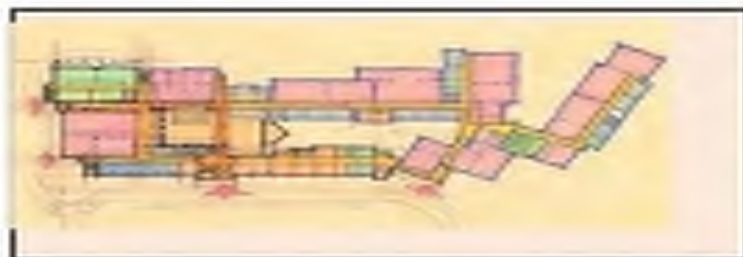


Evaluation Criteria		Concept Options			
		MSBA Required	Add/ Reno Options	New Construction Options	
Construction Duration:		multiple years			
1	<b>Ed Plan Accommodation Compliance w/ Vision</b>	doesn't address any educational deficiencies	<b>AR.1</b>	<b>NC.2.0</b>	<b>NC.2.1</b>
			<b>L - Shaped</b>	<b>Linear</b>	<b>Center Core</b>
			3+ years	2+ years	2+ years
			Addresses most Space Needs	Good Ed Plan Conformance	Good Ed Plan Conformance
2	<b>Project Cost Reimbursable Cost Temporary Costs Long-term Value</b>	Higher reimbursement rate for renovation	Lacks meaningful integration of academic & CTE spaces	Multi-purpose Student Commons	Clear "Heart of the School" space
			Poor career cluster adjacencies	Slightly Higher Initial Construction Cost	Highest Initial Construction Cost
			Slightly Lower initial cost	Best Long-Term Value	Best Long-Term Value
			High (non-reimbursable) temporary costs.	Few non-reimbursable temporary costs	Few non-reimbursable temporary costs
3	<b>Disruption Impact on Students Construction Duration Phasing</b>	Phased construction adjacent to occupancy	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction.	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction.	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction.
			Long construction schedule	Short duration	Short duration
			Multi-phase renovation	2 phases: 1. New construction, 2 Demolition & Sitework	2 phases: 1. New construction, 2 Demolition & Sitework
			Some Flexibility	Good Flexibility,	Good Flexibility,
4	<b>Flexibility Community Use Expansion Potential</b>	Good community use	Better Community access & Separation	Better Community access & Separation	Better Community access & Separation
			Limited expansion potential	Limited expansion potential	Limited expansion potential
			Limited expansion potential	Limited expansion potential	Limited expansion potential
			Limited expansion potential	Limited expansion potential	Limited expansion potential

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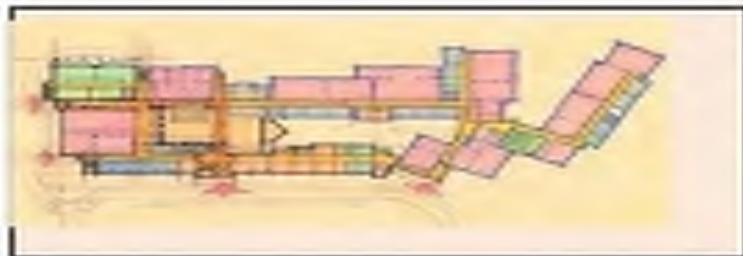
Concept Options

Evaluation Criteria		MSBA Required		Concept Options		
		Base Repair	Code Renovation	Add/ Reno Options	New Construction Options	
Construction Duration:			multiple years			
				<b>AR.1</b>	<b>NC.2.0</b>	<b>NC.2.1</b>
				<b>L - Shaped</b>	<b>Linear</b>	<b>Center Core</b>
				3+ years	2+ years	2+ years
5	<b>Operating Costs Maintenance</b>			Generally all new finish materials & systems Some existing infrastructure remains Limited Building envelope upgrade	All new construction, infrastructure, & MEP systems Best thermal envelope	All new construction, infrastructure, & MEP systems Best thermal envelope
6	<b>Site Access Safety &amp; Security Circulation/ Flow</b>			Site circulation similar to existing Potential admin presence at existing public entrance Remains somewhat sprawling	Site approach offset from entrance Central, secure access to public shops Good separation of assembly & academic areas, but with long linear corridor Contained Outdoor Student gathering area	Site Approach focused on School, entry Central, secure access to public shops Shorter internal travel distance to core, but potentially disrupts cafeteria Outdoor Student gathering area in front
7	<b>Final Site layout Site amenities Impact to Abutters</b>			Similar to existing No additional site amenities Minimal new impact to abutters	Building layout follows buildable area Good relationship of lockers to athletic fields Separate Buses and Car drop-offs in front Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Long distance around back of building from lockers to athletic fields Bus access at rear off of the Commons Patio Playing fields may impact abutters
8	<b>Civic Image / Aesthetics</b>			New "front door" and civic image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image

Most / least advantageous

Overall

Most / least advantageous



# Thank you!

*Please note:*

Upcoming Community Meetings:

January 25	SBC Meeting	Brass Lantern	5 pm
January 25	Public Forum	Abington Town Hall	7 pm

School Building Committee



**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT**  
**476 Webster Street, Hanover, MA 02339**  
**JOINT MEETING OF**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL COMMITTEE**  
**AND**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE**  
**Thursday, January 25, 2024 – 5:00PM**  
**Brass Lantern Restaurant**

**AGENDA**

1. **Call to Order of the School Committee**
2. **Pledge of Allegiance**
3. **Public Hearing on FY25 Budget (Vote to open/close hearing)**
4. **Agenda Items for the School Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Approve Minutes from December 20, 2023 School Committee Meeting (**Vote**)
  - d. Reports
    - 1) Superintendent-Director
      - a) Regional Agreement Amendment Update
  - e. Old Business
    - 1) Successor Bus Lease Cost Authorization (**Vote**)
  - f. New Business
    - 1) Preliminary FY25 Budget Assessment Review
    - 2) Possible FY25 Budget Certification (**Vote**)
    - 3) Review of Policies in Attachment A – First Reading
  - g. Request for Action
  - h. Adjourn School Committee Meeting (**Vote**)
1. **Call to Order of the School Building Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Approve November 30, 2023 meeting minutes (**Vote**)
  - d. Project Updates
  - e. Discussion of revised cost estimates and design matrix, and possible vote to select preferred design and/or preferred enrollment (**Vote**)
  - f. Adjourn School Building Committee meeting (**Vote**)

Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted January 23, 2024*

# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison

	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
Estimated Construction Costs	\$202 M (\$857 / sf)	\$213 M (\$839 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)	\$225 M (\$936 / sf)	\$233 M (\$897 / sf)
Estimated Total Project Costs	\$264 M	\$280 M	\$274 M	\$283M	\$282 M	\$292 M
Estimated MSBA Share	42.04% \$111 M	42.56% \$119M	36.34% \$100 M	37.89% \$107 M	35.82% \$101 M	37.25% \$109 M
Estimated District Share	57.96% \$153 M	57.44% \$161 M	63.66% \$174 M	62.11% \$176 M	64.18% \$181 M	62.75% \$183 M

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.



# PROJECT APPROVALS



January 25, 2024

## Per Town Monthly Cost Breakdown

Per Town Monthly Share based on estimated 30-year level debt service at 3.75%. Based on 10/2023 apportionment percentage only.	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
<b>Est. Total Project Costs</b>	<b>\$264 M</b>	<b>\$280 M</b>	<b>\$274 M</b>	<b>\$283M</b>	<b>\$282 M</b>	<b>\$292 M</b>
<b>Est. District Share</b>	<b>\$153 M</b>	<b>\$161 M</b>	<b>\$174 M</b>	<b>\$176 M</b>	<b>\$181 M</b>	<b>\$183 M</b>
<b>Abington – 16.7%</b>	\$206,320	\$218,159	\$213,845	\$221,361	\$219,992	\$228,002
<b>Cohasset – 1.49%</b>	\$18,408	\$19,464	\$19,080	\$19,750	\$19,628	\$20,343
<b>Hanover- 11.06%</b>	\$136,640	\$144,481	\$141,625	\$146,602	\$145,696	\$151,000
<b>Hanson – 13.03%</b>	\$160,979	\$170,216	\$166,851	\$172,715	\$171,647	\$177,896
<b>Norwell – 4.10%</b>	\$50,653	\$53,560	\$52,501	\$54,346	\$54,010	\$55,976
<b>Rockland – 22.77%</b>	\$281,311	\$297,454	\$291,573	\$301,820	\$299,954	\$310,874
<b>Scituate – 6.6%</b>	\$81,539	\$86,218	\$84,514	\$87,484	\$86,943	\$90,108
<b>Whitman – 24.25%</b>	\$299,596	\$316,788	\$310,524	\$321,438	\$319,450	\$331,080

Estimated MSBA Reimbursement Rates are for **COMPARISON PURPOSED ONLY** and are subject to increase or decrease. Marshfield’s share will be factored in once their share is known at the end of on boarding into the District. The estimated construction and total project cost provided are for **COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.

# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison – AR 1.0

### South Shore Tech: Hanover, MA

### Preferred Schematic Report - Comparative Cost Analysis

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.

Student Enrollment Range: 805 - 900 Students

	805 Students AR 01			900 Students AR 01			Avg Delta Between Enrollments
	GSF: 235,310			GSF: 253,990			
	Ellana	AM Fogarty	Delta	Ellana	AM Fogarty	Delta	
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	\$ 201,736,019	\$ 204,479,881	\$ (2,743,862)	\$ 213,212,216	\$ 216,691,162	\$ (3,478,946)	\$ 11,843,739
Cost/SF:	\$ 857.32	\$ 868.98	\$ (11.66)	\$ 839.45	\$ 853.15	\$ (13.70)	\$ (16.85)
Estimated Soft Costs	\$ 62,589,015	\$ 63,388,763	\$ (799,748)	\$ 66,280,566	\$ 67,174,260	\$ (893,694)	\$ 3,738,524.08
<b>TOTAL ESTIMATED PROJECT COSTS</b>	\$ 264,325,034	\$ 267,868,644	\$ (3,543,610)	\$ 279,492,782	\$ 283,865,423	\$ (4,372,641)	\$ 15,582,263
Cost/Student	\$ 328,354.08	\$ 332,756.08	\$ (4,402.00)	\$ 310,547.54	\$ 315,406.03	\$ (4,858.49)	

Estimated MSBA Reimbursement Rates are for COMPARISON PURPOSED ONLY and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

	Est. Rate	Est. Share		Est. Rate	Est. Share
MSBA Estimated Reimbursement	42.04%	\$111 M	MSBA Estimated Reimbursement	42.56%	\$119M
Estimated District Share	57.96%	\$153 M	Estimated District Share	57.44%	\$161 M



# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison – NC 2.0

### South Shore Tech: Hanover, MA

### Preferred Schematic Report - Comparative Cost Analysis

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.

Student Enrollment Range: 805 - 900 Students

	805 Students NC 2.0			900 Students NC 2.0			Avg Delta Between Enrollments
	GSF: 237,175			GSF: 256,350			
	Ellana	AM Fogarty	Delta	Ellana	AM Fogarty	Delta	
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	\$ 218,356,593	\$ 212,552,227	\$ 5,804,366	\$ 225,773,834	\$ 222,409,715	\$ 3,364,119	\$ 8,637,365
Cost/SF:	\$ 920.66	\$ 896.18	\$ 24.47	\$ 880.72	\$ 867.60	\$ 13.12	\$ (34.26)
Estimated Soft Costs	\$ 55,610,116	\$ 53,138,057	\$ 2,472,059	\$ 57,821,599	\$ 57,826,526	\$ (4,927)	\$ 3,449,976.08
<b>TOTAL ESTIMATED PROJECT COSTS</b>	\$ 273,966,709	\$ 265,690,284	\$ 8,276,425	\$ 283,595,433	\$ 280,236,241	\$ 3,359,192	\$ 12,087,341
Cost/Student	\$ 340,331.32	\$ 330,050.04	\$ 10,281.27	\$ 315,106.04	\$ 311,373.60	\$ 3,732.44	\$ (21,951)

Estimated MSBA Reimbursement Rates are for COMPARISON PURPOSED ONLY and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

	Est. Rate	Est. Share		Est. Rate	Est. Share
MSBA Estimated Reimbursement	36.34%	\$100 M	MSBA Estimated Reimbursement	37.89%	\$107M
Estimated District Share	63.66%	\$174 M	Estimated District Share	62.11%	\$176 M

# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison – NC 2.1

### South Shore Tech: Hanover, MA

#### Preferred Schematic Report - Comparative Cost Analysis

The estimated construction and total project cost provided are for COMPARISON PURPOSES ONLY. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.

Student Enrollment Range: 805 - 900 Students

	805 Students NC 2.1			900 Students NC 2.1			Avg Delta Between Enrollments
	GSF: 240,360			GSF: 259,520			
	Ellana	AM Fogarty	Delta	Ellana	AM Fogarty	Delta	
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>	\$ 224,946,731	\$ 215,997,353	\$ 8,949,378	\$ 232,893,002	\$ 224,553,228	\$ 8,339,774	\$ 8,251,073
Cost/SF:	\$ 935.87	\$ 898.64	\$ 37.23	\$ 897.40	\$ 865.26	\$ 32.14	\$ (35.93)
Estimated Soft Costs	\$ 56,895,193	\$ 53,999,338	\$ 2,895,855	\$ 59,209,835	\$ 56,138,307	\$ 3,071,528	\$ 2,226,805.38
<b>TOTAL ESTIMATED PROJECT COSTS</b>	\$ 281,841,924	\$ 269,996,691	\$ 11,845,233	\$ 292,102,837	\$ 280,691,535	\$ 11,411,302	\$ 10,477,878
Cost/Student	\$ 350,114.19	\$ 335,399.62	\$ 14,714.57	\$ 324,558.71	\$ 311,879.48	\$ 12,679.22	

Estimated MSBA Reimbursement Rates are for COMPARISON PURPOSED ONLY and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

	Est. Rate	Est. Share		Est. Rate	Est. Share
MSBA Estimated Reimbursement	35.82%	\$101 M	MSBA Estimated Reimbursement	37.25%	\$109 M
Estimated District Share	64.18%	\$181 M	Estimated District Share	62.75%	\$183 M



# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison – AR 1.0

	Option AR 1.0 Add/Reno 645 Students	Option AR 1.0 Add/Reno 750 Students	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students
Estimated Construction Costs	\$181 M (\$896/ sf)	\$190 M (\$870 / sf)	\$202 M (\$857 / sf)	\$213 M (\$839 / sf)
Estimated Total Project Costs	\$226 M	\$237M	\$264 M	\$280 M
Estimated MSBA Share	42% \$95 M	42% \$99M	42.04% \$111 M	42.56% \$119M
Estimated District Share	58% \$131 M	58% \$138M	57.96% \$153 M	57.44% \$161 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.

# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison – NC 2.0

	Option NC 2.0 New 645 Students	Option NC 2.0 New 750 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students
Estimated Construction Costs	\$196 M (\$963 / sf)	\$213 M (\$934 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)
Estimated Total Project Costs	\$245 M	\$267 M	\$274 M	\$283M
Estimated MSBA Share	36% \$88 M	36% \$96M	36.34% \$100 M	37.89% \$107 M
Estimated District Share	64% \$157 M	64% \$171 M	63.66% \$174 M	62.11% \$176 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.



# PROJECT APPROVALS



January 25, 2024

## Cost Estimate Comparison – NC 2.1

	Option NC 2.1 New 645 Students	Option NC 2.1 New 750 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
Estimated Construction Costs	\$199 M (\$978 / sf)	\$217 M (\$950 / sf)	\$225 M (\$936 / sf)	\$233 M (\$897 / sf)
Estimated Total Project Costs	\$249 M	\$271 M	\$282 M	\$292 M
Estimated MSBA Share	35% \$87 M	35% \$95M	35.82% \$101 M	37.25% \$109 M
Estimated District Share	65% \$162 M	65% \$176 M	64.18% \$181 M	62.75% \$183 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.

**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT**  
**436 Webster Street, Hanover, MA 02339**  
**JOINT MEETING OF**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL COMMITTEE**  
**AND**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE**  
**Thursday, February 8, 2024 – 6:00PM**

**AGENDA**

1. **Call to Order of the School Committee and School Building Committee**
2. **Pledge of Allegiance**
3. **Agenda Items for the School Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Reports
    - 1) Superintendent-Director
      - a) Regional Agreement Amendment Update
  - d. New Business
    - 1) FY25 Budget Certification (**Vote**)
    - 2) Stabilization Fund Transfer for School Bus Purchase (**Vote**)
    - 3) Surplus – Manufacturing Engineering Technology – J&L Optical Comparator (**Vote**)
    - 4) Out-of-State Field Trip – Carpentry – Rhode Island Convention Center, Providence, Rhode Island, March 22, 2024 (**Vote**)
  - e. Request for Action
  - f. Adjourn School Committee Meeting (**Vote**)
4. **Agenda Items for the School Building Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. OPM Updates
  - d. Discussion on Design/Enrollment Options and Tax Impacts (**Possible Votes**)
  - e. Next Meeting
  - f. Adjourn School Building Committee meeting (**Vote**)

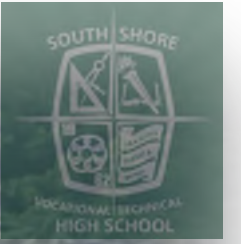
Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted February 6, 2024*



# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

February 8, 2024



100  
YEARS

DRA

# PROCESS SUMMARY



## Option 1

Code Upgrade - 121,805 SF (existing only)  
 \$110 M Estimated Total Project Budget  
 (No MSBA Participation)

February 8, 2024

	645 Students	750 Students	805 Students	900 Students	975 Students
Add/Reno AR-1.0	Enrollment Voted Out	Enrollment Voted Out	235,310 SF \$264 M	253,990 SF \$280 M	Enrollment Voted Out
Add/Reno AR-2.0			AR 2.0 Voted Out		
New Construction NC-1.0			NC 1.0 Voted Out		
New Construction NC-2.0			237,175 SF \$274 M	256,350 SF \$283 M	
New Construction NC-2.1			240,360 SF \$282 M	259,520 SF \$292 M	
New Construction NC-3.0			NC 3.0 Voted Out		

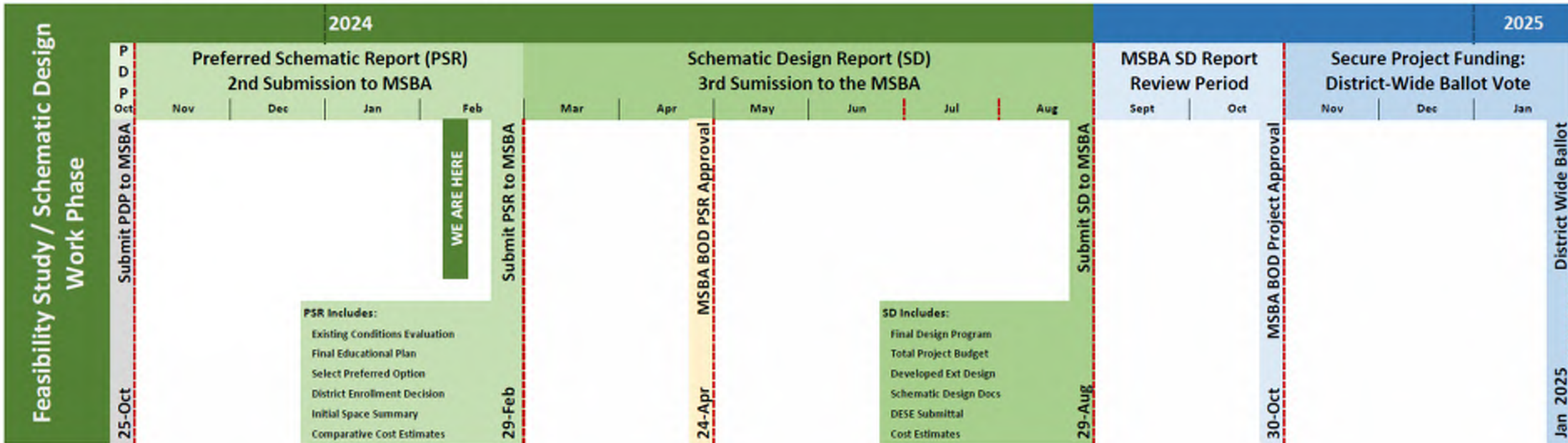


# PROCESS SUMMARY



February 8, 2024

## Current Feasibility Schedule



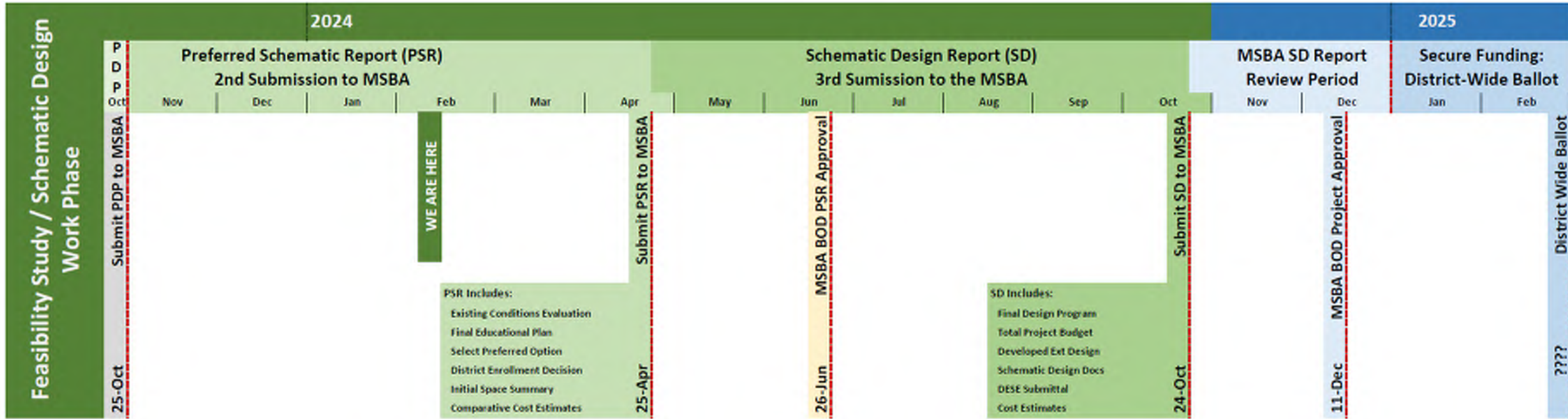
- 2/29/24 - PSR To Be Submitted to MSBA**
- 4/24/24 - PSR Approval by MSBA BOD**
- 8/28/24 – SD Report Be Submitted to MSBA**
- 10/30/24 – SD Approval by MSBA BOD**
- 1/2025 – District-Wide Ballot Vote for Project Approval**

# PROCESS SUMMARY

## Alternate Feasibility Schedule



February 8, 2024



**4/25/24 - PSR To Be Submitted to MSBA**

**6/26/24 - PSR Approval by MSBA BOD**

**10/24/24 – SD Report Be Submitted to MSBA**

**12/11/24 – SD Approval by MSBA BOD**

**??? – District-Wide Ballot Vote for Project Approval**

**Estimated Escalation Cost Per Month  
to Push Out Project Approval: \$500,000 - \$800,000**

**Estimated Cost to Conduct Additional Estimates:  
Approximately \$10,000 - \$15,000 (there are available  
Feasibility Funds that could cover this cost)**



# DESIGN OPTION SUMMARY

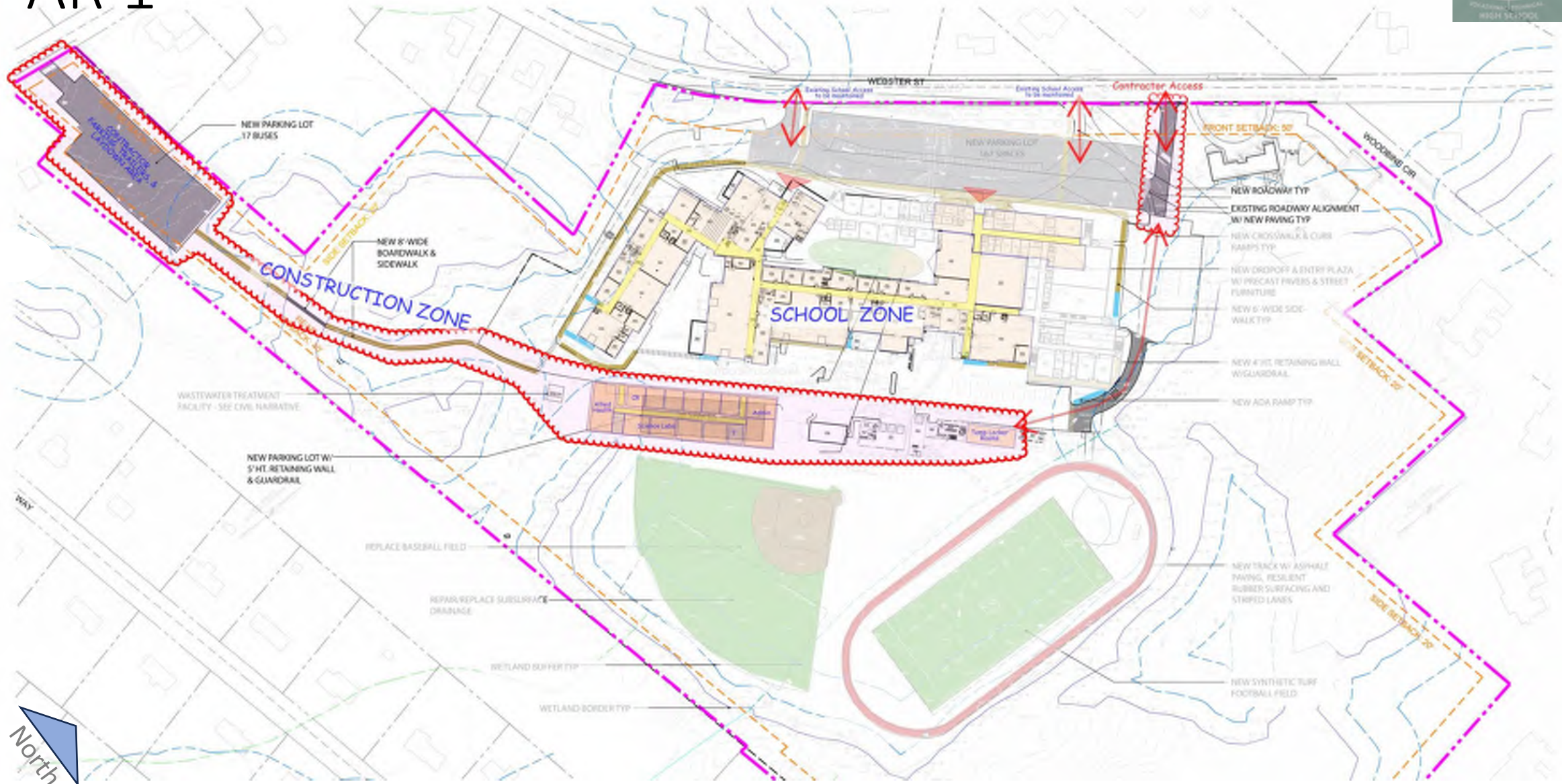


## AR 1.0 – Addition/Renovation

February 8, 2024

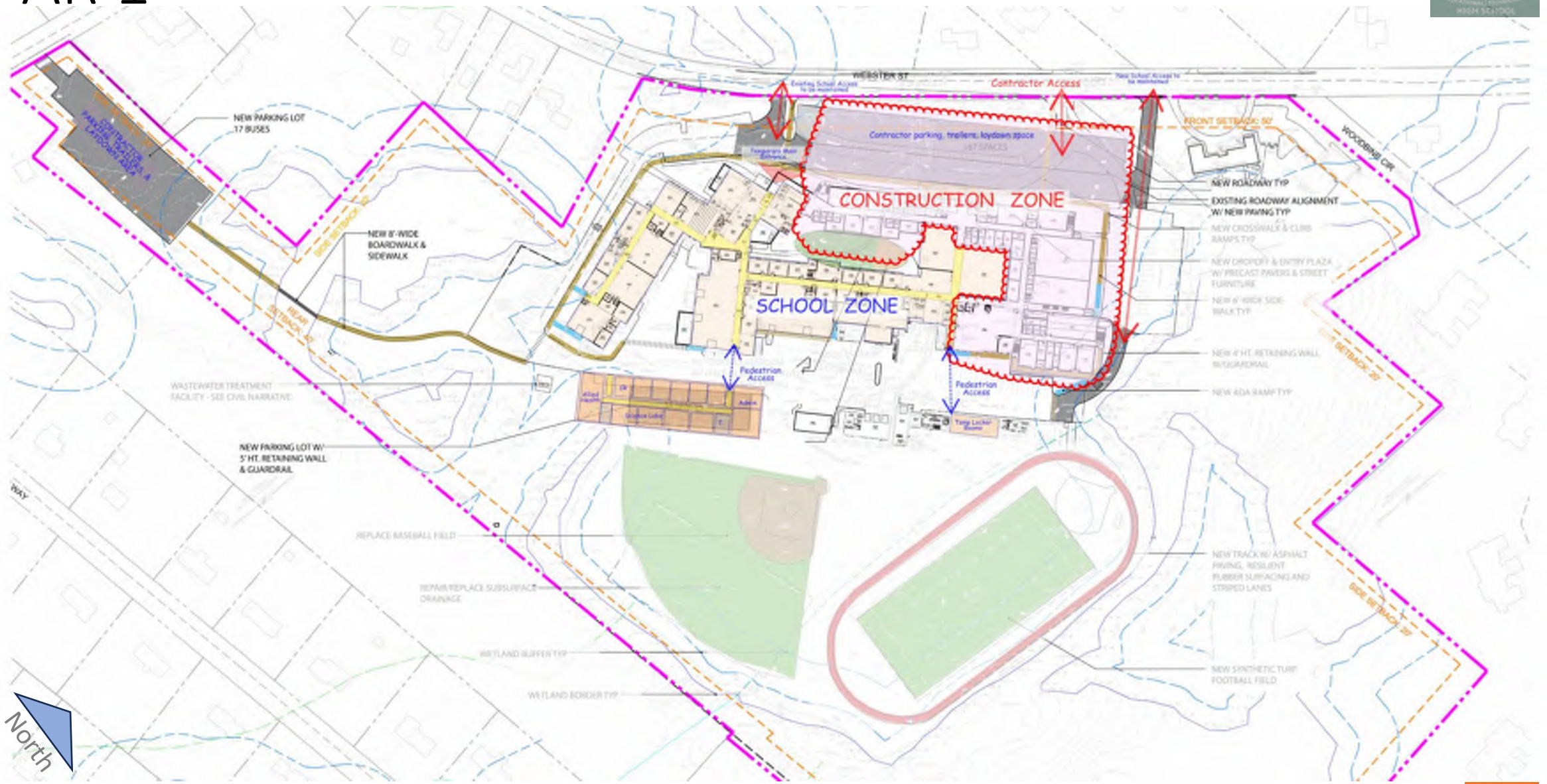
<b>Estimated Construction Duration</b>	<b>52 Months</b>	
<b>Advantages</b>	Lowest Initial Cost	
	Higher MSBA Reimbursement Rate	
	Minimal change to site layout and therefore less visual impact for abutters	
<b>Disadvantages</b>	Most disruptive to education during construction due to extended construction duration in occupied building	
	Unable to achieve programmatic adjacencies identified in Educational Plan	
	Least future-flexible option due to constraints of the existing building	
	Least energy efficient due to reuse of existing building and therefore higher operational costs	
	No additional site amenities – no considerable upgrade to site circulation	
	Shorter building life expectancy due to reuse of existing building	
	Likelihood of additional unforeseen costs during construction due to age of existing building	
	<b>805 Students - 235,310 SF</b>	<b>900 Students - 253,990 SF</b>
Est. Total Project Budget	\$264 Million	\$280 Million
Est. District Share	\$153 Million	\$161 Million

# AR 1



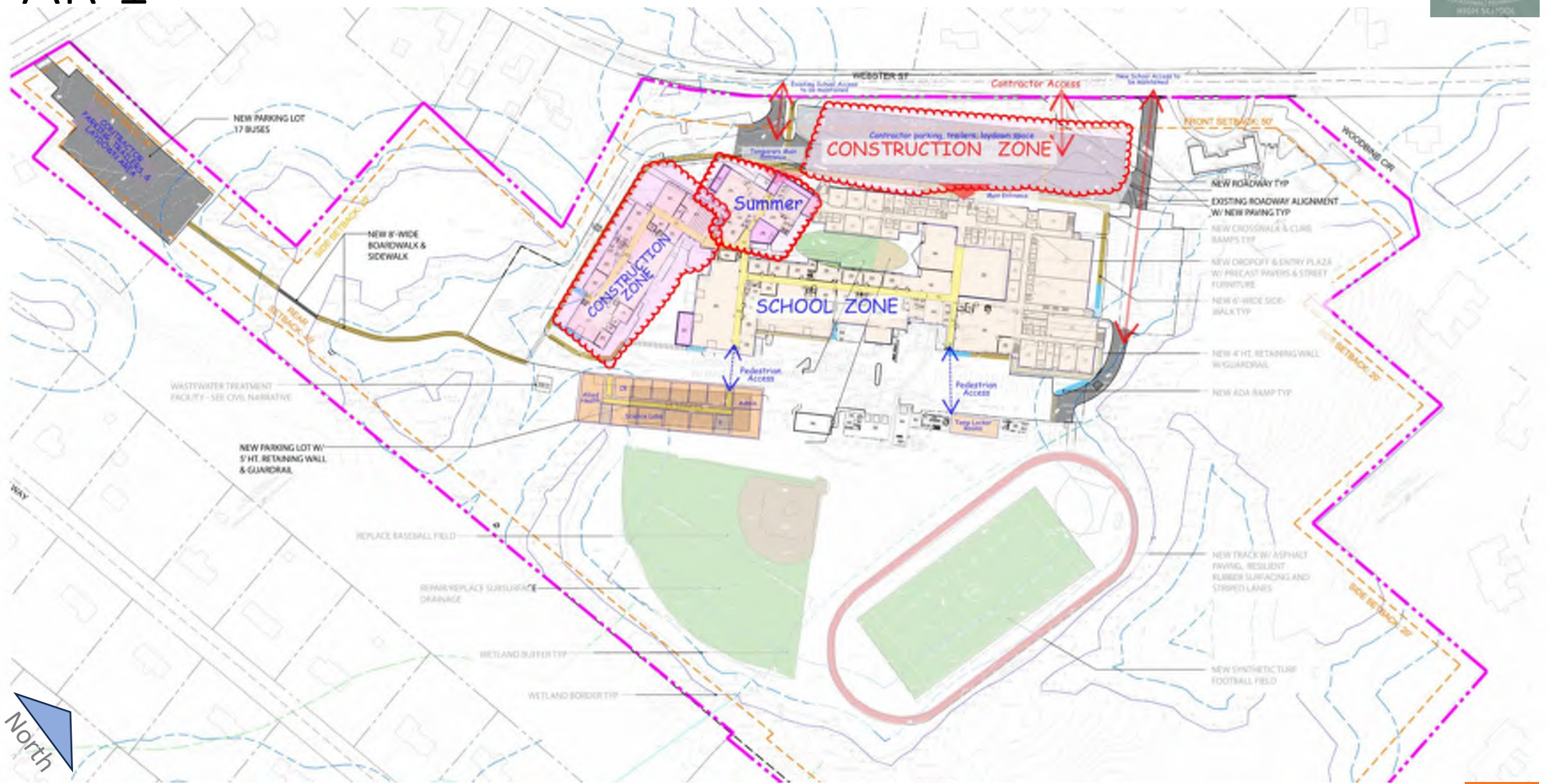


# AR 1



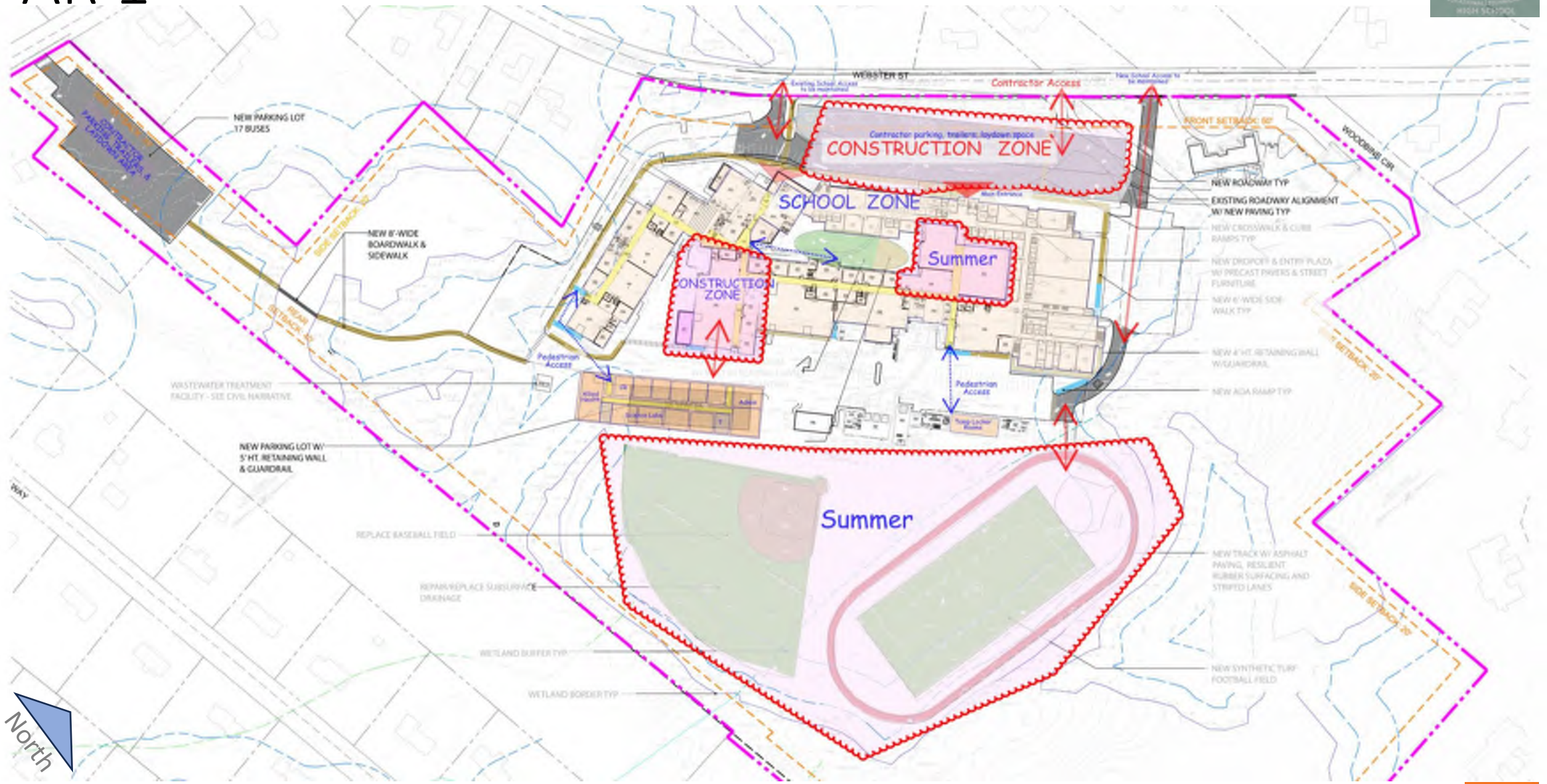


# AR 1



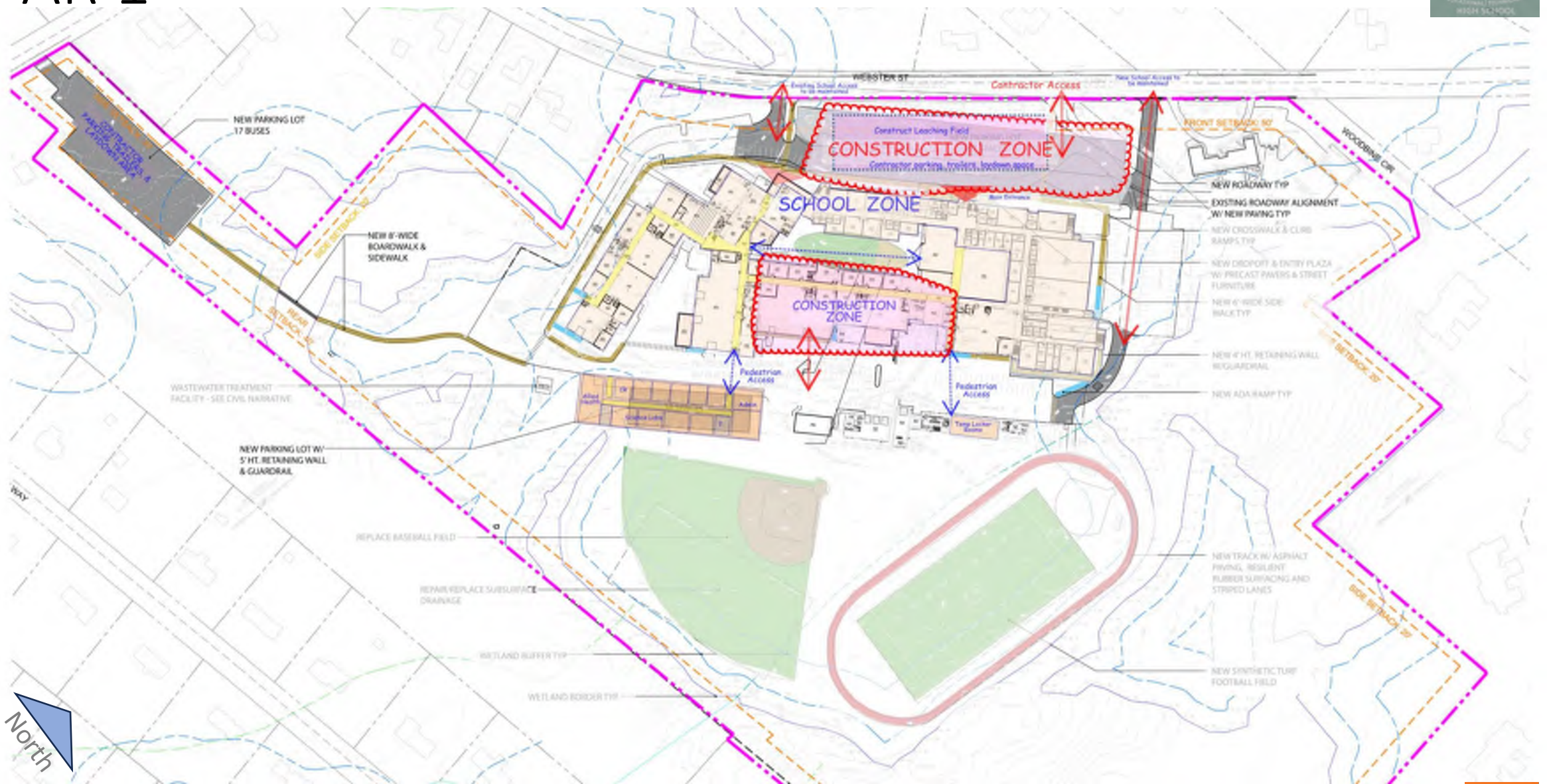


# AR 1



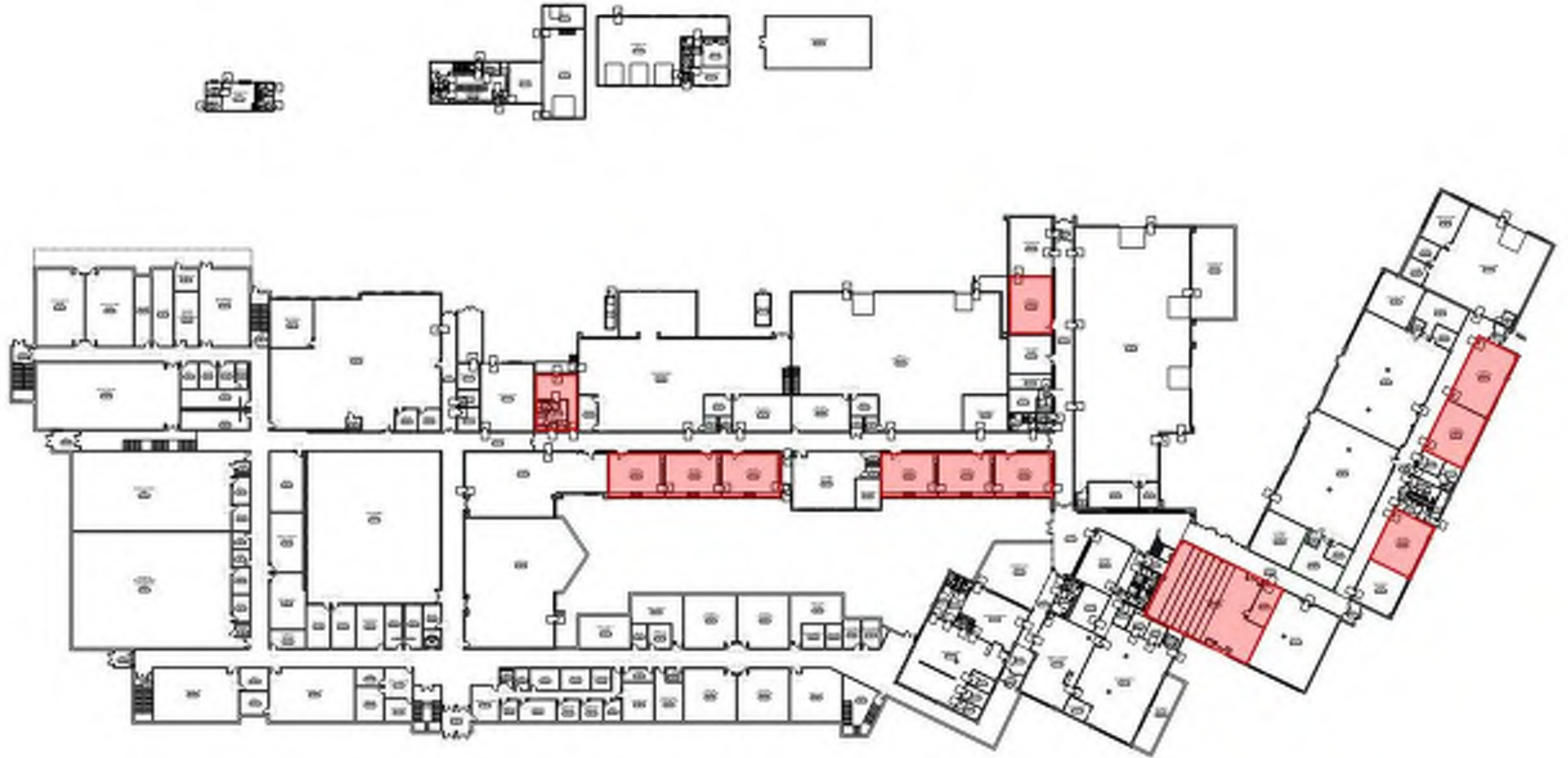


# AR 1





# AR 1



# DESIGN OPTION SUMMARY



February 8, 2024

## NC 2.0 – New Construction

<b>Estimated Construction Duration</b>	<b>30 Months</b>
<b>Advantages</b>	Best adherence to Educational Plan – provides all spaces and adjacencies outlined
	Future-flexible as spaces are right-sized, will allow for some future growth past selected design enrollment
	Highly energy efficient with lower operational costs over life of building
	Upgraded site circulation – better bus and car parking, pickup/drop-off, less impact to Webster St. traffic
	Better community use access and easier community use separation within building
	Best connection of locker rooms and fields
<b>Disadvantages</b>	Limited building expansion opportunities due to site constraints
	Athletic fields and parking closest to street, lessening civic presence from Webster Street
	Limited access to site amenities (parking, fields) during construction

	<b>805 Students - 237,175 SF</b>	<b>900 Students - 256,350 SF</b>
Est. Total Project Budget	\$274 Million	\$283 Million
Est. District Share	\$174 Million	\$176 Million



# DESIGN OPTION SUMMARY

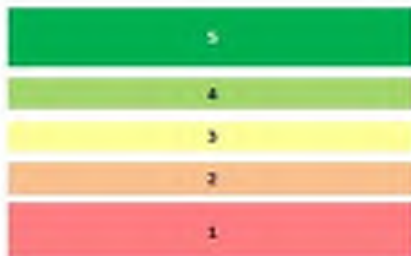


February 8, 2024

## NC 2.1 – New Construction

<b>Estimated Construction Duration</b>	<b>30 Months</b>	
<b>Advantages</b>	Best adherence to Educational Plan – provides all spaces and adjacencies outlined	
	Future-flexible as spaces are right-sized, will allow for some future growth past selected design enrollment	
	Highly energy efficient with lower operational costs over life of building	
	Upgraded site circulation – better bus and car parking, pickup/drop-off, less impact to Webster St. traffic	
	Best connection of locker rooms and fields	
<b>Disadvantages</b>	Limited building expansion opportunities due to site constraints	
	Athletic fields and parking closest to street, lessening civic presence from Webster Street	
	Limited access to site amenities (parking, fields) during construction	
	Larger building, less efficient layout due to interior circulation needed to achieve appropriate adjacencies	
	Less ideal and less secure location for outdoor gathering/eating space – at the front of the building	
	<b>805 Students - 240,360 SF</b>	<b>900 Students - 259,520 SF</b>
Est. Total Project Budget	\$282 Million	\$292 Million
Est. District Share	\$181 Million	\$183 Million

Evaluation Criteria		Concept Options			
		MSBA Required	Add/ Reno Options	New Construction Options	
Construction Duration:		multiple years			
1	<b>Ed Plan Accommodation Compliance w/ Vision</b>	doesn't address any educational deficiencies	<b>AR.1</b>	<b>NC.2.0</b>	<b>NC.2.1</b>
			<b>L - Shaped</b>	<b>Linear</b>	<b>Center Core</b>
			3+ years	2+ years	2+ years
			Addresses most Space Needs	Good Ed Plan Conformance	Good Ed Plan Conformance
2	<b>Project Cost Reimbursable Cost Temporary Costs Long-term Value</b>	Higher reimbursement rate for renovation	Lacks meaningful integration of academic & CTE spaces	Multi-purpose Student Commons	Clear "Heart of the School" space
			Poor career cluster adjacencies	Slightly Higher Initial Construction Cost	Highest Initial Construction Cost
			Slightly Lower initial cost	Best Long-Term Value	Best Long-Term Value
			High (non-reimbursable) temporary costs.	Few non-reimbursable temporary costs	Few non-reimbursable temporary costs
3	<b>Disruption Impact on Students Construction Duration Phasing</b>	Phased construction adjacent to occupancy	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction.	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction.	Minimal impact on adjacent occupancy. Loss of Athletic Fields during construction.
			Long construction schedule	Short duration	Short duration
			Multi-phase renovation	2 phases: 1. New construction, 2 Demolition & Sitework	2 phases: 1. New construction, 2 Demolition & Sitework
			Some Flexibility	Good Flexibility,	Good Flexibility,
4	<b>Flexibility Community Use Expansion Potential</b>	Good community use	Better Community access & Separation	Better Community access & Separation	Better Community access & Separation
			Limited expansion potential	Limited expansion potential	Limited expansion potential
			Limited expansion potential	Limited expansion potential	Limited expansion potential
			Limited expansion potential	Limited expansion potential	Limited expansion potential



positive / most advantageous

neutral

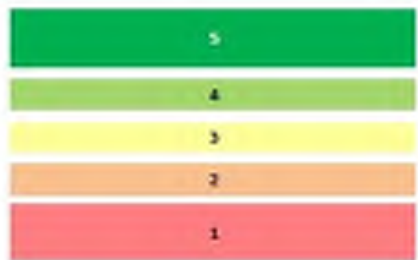
negative / least advantageous





Concept Options

Evaluation Criteria		MSBA Required		Concept Options		
		Base Repair	Code Renovation	Add/ Reno Options	New Construction Options	
Construction Duration:			multiple years			
5	<b>Operating Costs Maintenance</b>			<b>AR.1</b> <b>L - Shaped</b> 3+ years Generally all new finish materials & systems Some existing infrastructure remains Limited Building envelope upgrade	<b>NC.2.0</b> <b>Linear</b> 2+ years All new construction, infrastructure, & MEP systems Best thermal envelope	<b>NC.2.1</b> <b>Center Core</b> 2+ years All new construction, infrastructure, & MEP systems Best thermal envelope
6	<b>Site Access Safety &amp; Security Circulation/ Flow</b>			Site circulation similar to existing Potential admin presence at existing public entrance Remains somewhat sprawling	Site approach offset from entrance Central, secure access to public shops Good separation of assembly & academic areas, but with long linear corridor Contained Outdoor Student gathering area	Site Approach focused on School, entry Central, secure access to public shops Shorter internal travel distance to core, but potentially disrupts cafeteria Outdoor Student gathering area in front
7	<b>Final Site layout Site amenities Impact to Abutters</b>			Similar to existing No additional site amenities Minimal new impact to abutters	Building layout follows buildable area Good relationship of lockers to athletic fields Separate Buses and Car drop-offs in front Patio off of the Commons Playing fields may impact abutters	Wings create shared outdoor collaboration area Long distance around back of building from lockers to athletic fields Bus access at rear off of the Commons Playing fields may impact abutters
8	<b>Civic Image / Aesthetics</b>			New "front door" and civic image	School setback from street Athletic fields & parking in front yard All new construction = all new image	School setback from street Athletic fields & parking in front yard All new construction = all new image



5 positive / most advantageous  
 4  
 3 neutral  
 2  
 1 negative / least advantageous



# PROJECT COST UPDATE



February 8, 2024

## Cost Estimate Comparison

	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
Estimated Construction Costs	\$202 M (\$857 / sf)	\$213 M (\$839 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)	\$225 M (\$936 / sf)	\$233 M (\$897 / sf)
Estimated Total Project Costs	\$264 M	\$280 M	\$274 M	\$283M	\$282 M	\$292 M
Estimated MSBA Share	42.04% \$111 M	42.56% \$119M	36.34% \$100 M	37.89% \$107 M	35.82% \$101 M	37.25% \$109 M
Estimated District Share	57.96% \$153 M	57.44% \$161 M	63.66% \$174 M	62.11% \$176 M	64.18% \$181 M	62.75% \$183 M

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

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# PROJECT COST UPDATE



February 8, 2024

## Cost Estimate Comparison – AR 1.0

	Option AR 1.0 Add/Reno 645 Students	Option AR 1.0 Add/Reno 750 Students	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students
Estimated Construction Costs	\$181 M (\$896/ sf)	\$190 M (\$870 / sf)	\$202 M (\$857 / sf)	\$213 M (\$839 / sf)
Estimated Total Project Costs	\$226 M	\$237M	\$264 M	\$280 M
Estimated MSBA Share	42% \$95 M	42% \$99M	42.04% \$111 M	42.56% \$119M
Estimated District Share	58% \$131 M	58% \$138M	57.96% \$153 M	57.44% \$161 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

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# PROJECT COST UPDATE



February 8, 2024

## Cost Estimate Comparison – NC 2.0

	Option NC 2.0 New 645 Students	Option NC 2.0 New 750 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students
Estimated Construction Costs	\$196 M (\$963 / sf)	\$213 M (\$934 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)
Estimated Total Project Costs	\$245 M	\$267 M	\$274 M	\$283M
Estimated MSBA Share	36% \$88 M	36% \$96M	36.34% \$100 M	37.89% \$107 M
Estimated District Share	64% \$157 M	64% \$171 M	63.66% \$174 M	62.11% \$176 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

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The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.



# PROJECT COST UPDATE



February 8, 2024

## Cost Estimate Comparison – NC 2.1

	Option NC 2.1 New 645 Students	Option NC 2.1 New 750 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
Estimated Construction Costs	\$199 M (\$978 / sf)	\$217 M (\$950 / sf)	\$225 M (\$936 / sf)	\$233 M (\$897 / sf)
Estimated Total Project Costs	\$249 M	\$271 M	\$282 M	\$292 M
Estimated MSBA Share	35% \$87 M	35% \$95M	35.82% \$101 M	37.25% \$109 M
Estimated District Share	65% \$162 M	65% \$176 M	64.18% \$181 M	62.75% \$183 M

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The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.

# PROJECT COST UPDATE



## Option 1

Code Upgrade - 121,805 SF (existing only)

\$110 M Estimated Total Project Budget

(No MSBA Participation)

February 8, 2024

	645 Students	750 Students	805 Students	900 Students
Add/Reno AR-1.0	New: 93,500 SF Reno: 108,000 SF <b>\$226 M</b>	New: 109,500 SF Reno: 108,000 SF <b>\$237 M</b>	New: 123,210 SF Reno: 112,100 SF <b>\$264 M</b>	New: 141,890 SF Reno: 112,100 SF <b>\$280 M</b>
	+5%	+11%	+6%	
New Construction NC-2.0	217,500 SF <b>\$245 M</b>	228,540 SF <b>\$267 M</b>	237,175 SF <b>\$274 M</b>	256,350 SF <b>\$283 M</b>
	+9%	+3%	+3%	
New Construction NC-2.1	217,500 SF <b>\$249 M</b>	228,540 SF <b>\$271 M</b>	240,360 SF <b>\$282 M</b>	259,520 SF <b>\$292 M</b>
	+9%	+4%	+3.5%	

- AR 1.0 - Jump in cost from 750 students to 805 students due to increase in square footage assumptions between PDP and PSR plus 805 design refined while 705 cost on square foot basis only.
- NC Options – Not as significant of an increase between 705 and 805 because new construction assumptions are easier to make at PDP phase, did not need much refining to PSR. Square footage came down from PDP to PSR, but same square foot assumptions made for PDP costs.



# PROJECT COST UPDATE



February 8, 2024

## ESTIMATED Taxpayer Impact – w/ 645 & 750

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

**\*\*30 year Level Principal  
@ 3.75% assumed\*\***

	Option AR 1.0 645 Students	Option AR 1.0 750 Students	Option AR 1.0 805 Students	Option AR 1.0 900 Students	Option NC 2.0 645 Students	Option NC 2.0 750 Students	Option NC 2.0 805 Students	Option NC 2.0 900 Students	Option NC 2.1 645 Students	Option NC 2.1 750 Students	Option NC 2.1 805 Students	Option NC 2.1 900 Students
Estimated Total Project Budget	\$ 226,000,000	\$ 237,000,000	\$ 264,000,000	\$ 280,000,000	\$ 245,000,000	\$ 267,000,000	\$ 274,000,000	\$ 283,000,000	\$ 249,000,000	\$ 271,000,000	\$ 282,000,000	\$ 292,000,000
Estimated District Share	\$ 131,000,000	\$ 138,000,000	\$ 153,000,000	\$ 161,000,000	\$ 157,000,000	\$ 171,000,000	\$ 174,000,000	\$ 176,000,000	\$ 162,000,000	\$ 176,000,000	\$ 181,000,000	\$ 183,000,000
Estimated SST Bond Amount	\$ 207,143,750	\$ 218,212,500	\$ 241,931,250	\$ 254,581,250	\$ 248,256,250	\$ 270,393,750	\$ 275,137,500	\$ 278,300,000	\$ 256,162,500	\$ 278,300,000	\$ 286,206,250	\$ 289,368,750
Estimated SST Year 1 Payment	\$ 9,279,167	\$ 9,775,000	\$ 10,837,500	\$ 11,404,167	\$ 11,120,833	\$ 12,112,500	\$ 12,325,000	\$ 12,466,667	\$ 11,475,000	\$ 12,466,667	\$ 12,820,833	\$ 12,962,500

FY24 Tax Rate		Annual AVG Taxpayer Share - Year 1											
Abington	\$ 13.38	\$ 275.49	\$ 286.51	\$ 319.57	\$ 336.10	\$ 325.08	\$ 358.14	\$ 363.65	\$ 363.65	\$ 336.10	\$ 369.16	\$ 374.67	\$ 380.18
Cohasset	\$ 12.17	\$ 38.65	\$ 51.53	\$ 51.53	\$ 51.53	\$ 51.53	\$ 64.41	\$ 64.41	\$ 64.41	\$ 51.53	\$ 64.41	\$ 64.41	\$ 64.41
Hanover	\$ 12.84	\$ 183.34	\$ 190.68	\$ 212.68	\$ 220.01	\$ 220.01	\$ 234.68	\$ 242.01	\$ 242.01	\$ 227.34	\$ 242.01	\$ 249.35	\$ 256.68
Hanson	\$ 13.38	\$ 299.92	\$ 314.92	\$ 349.91	\$ 369.91	\$ 359.91	\$ 394.90	\$ 399.90	\$ 404.90	\$ 369.91	\$ 404.90	\$ 414.89	\$ 419.89
Norwell	\$ 13.46	\$ 95.17	\$ 95.17	\$ 104.69	\$ 114.20	\$ 104.69	\$ 114.20	\$ 123.72	\$ 123.72	\$ 114.20	\$ 123.72	\$ 123.72	\$ 1.71
Rockland	\$ 14.06	\$ 317.57	\$ 332.22	\$ 371.31	\$ 390.85	\$ 381.08	\$ 415.28	\$ 420.17	\$ 425.05	\$ 390.85	\$ 425.05	\$ 439.71	\$ 444.59
Scituate	\$ 10.36	\$ 73.70	\$ 73.70	\$ 82.91	\$ 92.12	\$ 92.12	\$ 92.12	\$ 101.33	\$ 101.33	\$ 92.12	\$ 101.33	\$ 101.33	\$ 101.33
Whitman	\$ 12.74	\$ 423.17	\$ 441.98	\$ 493.70	\$ 517.21	\$ 503.10	\$ 550.12	\$ 559.53	\$ 564.23	\$ 521.91	\$ 564.23	\$ 583.04	\$ 587.74

FY24 Tax Rate		Monthly AVG Taxpayer Share - Year 1											
Abington	\$ 13.38	\$ 22.96	\$ 23.88	\$ 26.63	\$ 28.01	\$ 27.09	\$ 29.85	\$ 30.30	\$ 30.30	\$ 28.01	\$ 30.76	\$ 31.22	\$ 31.68
Cohasset	\$ 12.17	\$ 3.22	\$ 4.29	\$ 4.29	\$ 4.29	\$ 4.29	\$ 5.37	\$ 5.37	\$ 5.37	\$ 4.29	\$ 5.37	\$ 5.37	\$ 5.37
Hanover	\$ 12.84	\$ 15.28	\$ 15.89	\$ 17.72	\$ 18.33	\$ 18.33	\$ 19.56	\$ 20.17	\$ 20.17	\$ 18.95	\$ 20.17	\$ 20.78	\$ 21.39
Hanson	\$ 13.38	\$ 24.99	\$ 26.24	\$ 29.16	\$ 30.83	\$ 29.99	\$ 32.91	\$ 33.33	\$ 33.74	\$ 30.83	\$ 33.74	\$ 34.57	\$ 34.99
Norwell	\$ 13.46	\$ 7.93	\$ 7.93	\$ 8.72	\$ 9.52	\$ 8.72	\$ 9.52	\$ 10.31	\$ 10.31	\$ 9.52	\$ 10.31	\$ 10.31	\$ 0.14
Rockland	\$ 14.06	\$ 26.46	\$ 27.69	\$ 30.94	\$ 32.57	\$ 31.76	\$ 34.61	\$ 35.01	\$ 35.42	\$ 32.57	\$ 35.42	\$ 36.64	\$ 37.05
Scituate	\$ 10.36	\$ 6.14	\$ 6.14	\$ 6.91	\$ 7.68	\$ 7.68	\$ 7.68	\$ 8.44	\$ 8.44	\$ 7.68	\$ 8.44	\$ 8.44	\$ 8.44
Whitman	\$ 12.74	\$ 35.26	\$ 36.83	\$ 41.14	\$ 43.10	\$ 41.93	\$ 45.84	\$ 46.63	\$ 47.02	\$ 43.49	\$ 47.02	\$ 48.59	\$ 48.98



# PROJECT COST UPDATE



February 8, 2024

## ESTIMATED Taxpayer Impact - Annually

**\*\*30 year Level Principal  
@ 3.75% assumed\*\***

	Option AR 1.0 805 Students	Option AR 1.0 900 Students	Option NC 2.0 805 Students	Option NC 2.0 900 Students	Option NC 2.1 805 Students	Option NC 2.1 900 Students
Estimated Total Project Budget	\$ 264,000,000	\$ 280,000,000	\$ 274,000,000	\$ 283,000,000	\$ 282,000,000	\$ 292,000,000
Estimated District Share	\$ 153,000,000	\$ 161,000,000	\$ 174,000,000	\$ 176,000,000	\$ 181,000,000	\$ 183,000,000
Estimated SST Bond Amount	\$ 241,931,250	\$ 254,581,250	\$ 275,137,500	\$ 278,300,000	\$ 286,206,250	\$ 289,368,750
Estimated SST Year 1 Payment	\$ 10,837,500	\$ 11,404,167	\$ 12,325,000	\$ 12,466,667	\$ 12,820,833	\$ 12,962,500

	FY24 Tax Rate	Annual AVG Taxpayer Share - Year 1							
Abington	\$ 13.38	\$ 319.57	\$ 336.10	\$ 363.65	\$ 363.65	\$ 374.67	\$ 380.18		
Cohasset	\$ 12.17	\$ 51.53	\$ 51.53	\$ 64.41	\$ 64.41	\$ 64.41	\$ 64.41		
Hanover	\$ 12.84	\$ 212.68	\$ 220.01	\$ 242.01	\$ 242.01	\$ 249.35	\$ 256.68		
Hanson	\$ 13.38	\$ 349.91	\$ 369.91	\$ 399.90	\$ 404.90	\$ 414.89	\$ 419.89		
Norwell	\$ 13.46	\$ 104.69	\$ 114.20	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72		
Rockland	\$ 14.06	\$ 371.31	\$ 390.85	\$ 420.17	\$ 425.05	\$ 439.71	\$ 444.59		
Scituate	\$ 10.36	\$ 82.91	\$ 92.12	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33		
Whitman	\$ 12.74	\$ 493.70	\$ 517.21	\$ 559.53	\$ 564.23	\$ 583.04	\$ 587.74		

Estimated Taxpayer Impact for comparison only and should not be used as a budget. These numbers will change as more information is known and the budget is defined.



# PROJECT COST UPDATE



February 8, 2024

## ESTIMATED Taxpayer Impact - Monthly

**\*\*30 year Level Principal  
@ 3.75% assumed\*\***

Estimated Taxpayer Impact for comparison only and should not be used as a budget. These numbers will change as more information is known and the budget is defined.

	Option AR 1.0 805 Students		Option AR 1.0 900 Students		Option NC 2.0 805 Students		Option NC 2.0 900 Students		Option NC 2.1 805 Students		Option NC 2.1 900 Students	
<b>Estimated Total Project Budget</b>	\$ 264,000,000		\$ 280,000,000		\$ 274,000,000		\$ 283,000,000		\$ 282,000,000		\$ 292,000,000	
<b>Estimated District Share</b>	\$ 153,000,000		\$ 161,000,000		\$ 174,000,000		\$ 176,000,000		\$ 181,000,000		\$ 183,000,000	
<b>Estimated SST Bond Amount</b>	\$ 241,931,250		\$ 254,581,250		\$ 275,137,500		\$ 278,300,000		\$ 286,206,250		\$ 289,368,750	
<b>Estimated SST Year 1 Payment</b>	\$ 10,837,500		\$ 11,404,167		\$ 12,325,000		\$ 12,466,667		\$ 12,820,833		\$ 12,962,500	
<b>Norwell</b>	\$ 13.46	\$ 104.69	\$ 114.20	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72
<b>Rockland</b>	\$ 14.06	\$ 371.31	\$ 390.85	\$ 420.17	\$ 425.05	\$ 439.71	\$ 444.59	\$ 439.71	\$ 439.71	\$ 439.71	\$ 439.71	\$ 444.59
<b>Scituate</b>	\$ 10.36	\$ 82.91	\$ 92.12	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33
<b>Whitman</b>	\$ 12.74	\$ 493.70	\$ 517.21	\$ 559.53	\$ 564.23	\$ 583.04	\$ 587.74	\$ 583.04	\$ 583.04	\$ 583.04	\$ 583.04	\$ 587.74

**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT  
476 Webster Street,  
Hanover, MA 02339**

**SOUTH SHORE REGIONAL VOCATIONAL  
SCHOOL BUILDING COMMITTEE**

**Thursday, February 15, 2024 – 6:00 PM**

*This meeting will be held at the Administrative Offices located at 436 Webster Street, Hanover, MA*

**AGENDA**

1. Call to Order
2. Pledge of Allegiance
3. Agenda Adjustments
4. Public Comment
5. OPM Updates
6. Project Approvals (**Vote**)
  - a. February 8, 2024 Meeting Minutes
  - b. Invoices
7. Discussion on Design/Enrollment Options and Tax Impacts (**Possible Votes**)
8. Next Meeting
9. Adjourn (**Vote**)

Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted February 8, 2024*



# PROJECT UPDATE

## ADD/RENO COST



February 15, 2024

### + \$3.5 Million for under slab plumbing

(incl. markups)

- It was noted last week that under slab piping is already an issue in the existing building, so this cost and risk would need to be added to the project.
- This is a very invasive construction activity and requires a lot of planning to avoid undermining footings of the existing building. There is a lot of risk involved in this work.

### + \$10 Million for modular classrooms

(add to soft cost)

- While taking a closer look at the complexity of construction phasing within the building, a need for twice as much modular classroom square footage was identified. This cost covers that added cost.
- This cost is not reimbursed by the MSBA, and therefore drops the effective reimbursement rate for the project.
- This cost is for temporary structures and the modular classrooms would be removed at the end of the project. This is a cost that does not go into the end product.

### AR 1.0 @ 805 Students =

\$264 M – Original Total Project Budget Estimate

+ \$3.5 M – additional under slab plumbing (incl. markups)

+ \$10 M – additional modular cost (applied to soft costs)

**= \$277.5 M – Updated Total Project Budget Estimate**

**- \$105.5 M - Updated Estimated MSBA Share (decrease to 37.98%)**

**= \$172 M - Updated Estimated District Share**

### AR 1.0 @ 900 Students =

\$280 M – Original Total Project Budget Estimate

+ \$3.5 M – additional under slab plumbing (incl. markups)

+ \$10 M – additional modular cost (applied to soft costs)

**= \$293.5 M – Updated Total Project Budget Estimate**

**- \$113.6 M – Updated Estimated MSBA Share (decrease to 38.70%)**

**= \$179.9 M – Updated Estimated District Share**

**Future Flexibility** – May be able to accommodate up to 5% enrollment growth over time due to reuse of existing building

# PROJECT UPDATE

## CODE UPGRADE UPDATE



February 15, 2024

### Scope Includes:

- Adding sprinklers to the original building
- Full ADA Accessibility Upgrade
- Major HVAC Upgrade
- Replace all non-compliant plumbing fixtures
- Replace existing electrical infrastructure
  
- **DOES NOT** include any new finishes beyond what might be necessary to patch where new piping/mechanical/ electrical is installed. The existing building will look like it does today.
- **DOES NOT** include any new furniture
- **DOES NOT** include any new technology
- **DOES NOT** include any new equipment
- **DOES NOT** include any upgrade to site amenities

### Estimated Construction Cost:

**\$81.2 M / Estimated Total Project Budget: \$110 M**

- No MSBA funding participation in this option, total cost on District
- Cost could go up if upgrades completed piecemeal over a longer timeframe due to Escalation

### Schedule:

- Est. Cost assumes completing all scope immediately
- Building appraised at \$26.4M, work over \$8.7M (33% of appraised value) in a 3-year timeframe would trigger need to fully address ADA Accessibility (which is only a portion of the Code Upgrade Option scope).
- Other thresholds apply that would trigger need for full scope of code upgrade, this would need to be reviewed more thoroughly to understand what it means for this project.

### Future Flexibility:

- There is no ability for enrollment growth with this option.



# PROJECT UPDATE

## Cost Estimate Comparison



February 15, 2024

	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
Estimated Construction Costs	\$204.5 M (\$857 / sf)	\$216.5 M (\$839 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)	\$225 M (\$936 / sf)	\$233 M (\$897 / sf)
Estimated Total Project Costs	\$277.5 M	\$293.5 M	\$274 M	\$283M	\$282 M	\$292 M
Estimated MSBA Share	37.98% \$105.5 M	38.70% \$113.6M	36.34% \$100 M	37.89% \$107 M	35.82% \$101 M	37.25% \$109 M
Estimated District Share	62.02% \$172 M	61.30% \$179.9 M	63.66% \$174 M	62.11% \$176 M	64.18% \$181 M	62.75% \$183 M

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA.

# PROJECT UPDATE



February 15, 2024

## Cost Estimate Comparison – AR 1.0

	Option AR 1.0 Add/Reno 645 Students	Option AR 1.0 Add/Reno 750 Students	Option AR 1.0 Add/Reno 805 Students	Option AR 1.0 Add/Reno 900 Students
Estimated Construction Costs	\$183.5 M (\$896/ sf)	\$192.5 M (\$870 / sf)	\$204.5 M (\$857 / sf)	\$216.5 M (\$839 / sf)
Estimated Total Project Costs	\$250 M	\$262 M	\$277.5 M	\$293.5 M
Estimated MSBA Share	37.50% \$93.8 M	37.50% \$98.3 M	37.98% \$105.5 M	38.70% \$113.6M
Estimated District Share	62.50% \$156.2 M	62.50% \$163.7 M	62.02% \$172 M	61.30% \$179.9 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.



# PROJECT UPDATE



February 15, 2024

## Cost Estimate Comparison – NC 2.0

	Option NC 2.0 New 645 Students	Option NC 2.0 New 750 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students
Estimated Construction Costs	\$196 M (\$963 / sf)	\$213 M (\$934 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)
Estimated Total Project Costs	\$245 M	\$267 M	\$274 M	\$283M
Estimated MSBA Share	36% \$88 M	36% \$96M	36.34% \$100 M	37.89% \$107 M
Estimated District Share	64% \$157 M	64% \$171 M	63.66% \$174 M	62.11% \$176 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.

# PROJECT UPDATE



February 15, 2024

## Cost Estimate Comparison – NC 2.1

	Option NC 2.1 New 645 Students	Option NC 2.1 New 750 Students	Option NC 2.1 New 805 Students	Option NC 2.1 New 900 Students
Estimated Construction Costs	\$199 M (\$978 / sf)	\$217 M (\$950 / sf)	\$225 M (\$936 / sf)	\$233 M (\$897 / sf)
Estimated Total Project Costs	\$249 M	\$271 M	\$282 M	\$292 M
Estimated MSBA Share	35% \$87 M	35% \$95M	35.82% \$101 M	37.25% \$109 M
Estimated District Share	65% \$162 M	65% \$176 M	64.18% \$181 M	62.75% \$183 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.



# PROJECT COST UPDATE



February 15, 2024

## ESTIMATED Taxpayer Impact – w/ 645 & 750

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

**\*\*30 year Level Principal @ 3.75% assumed\*\***

	Option AR 1.0 645 Students	Option AR 1.0 750 Students	Option AR 1.0 805 Students	Option AR 1.0 900 Students	Option NC 2.0 645 Students	Option NC 2.0 750 Students	Option NC 2.0 805 Students	Option NC 2.0 900 Students	Option NC 2.1 645 Students	Option NC 2.1 750 Students	Option NC 2.1 805 Students	Option NC 2.1 900 Students
Estimated Total Project Budget	\$ 250,000,000	\$ 262,000,000	\$ 277,500,000	\$ 293,500,000	\$ 245,000,000	\$ 267,000,000	\$ 274,000,000	\$ 283,000,000	\$ 249,000,000	\$ 271,000,000	\$ 282,000,000	\$ 292,000,000
Estimated District Share	\$ 156,200,000	\$ 163,700,000	\$ 172,000,000	\$ 179,900,000	\$ 157,000,000	\$ 171,000,000	\$ 174,000,000	\$ 176,000,000	\$ 162,000,000	\$ 176,000,000	\$ 181,000,000	\$ 183,000,000
Estimated SST Bond Amount	\$ 249,991,250	\$ 258,850,625	\$ 271,975,000	\$ 284,466,875	\$ 248,256,250	\$ 270,393,750	\$ 275,137,500	\$ 278,300,000	\$ 256,162,500	\$ 278,300,000	\$ 286,206,250	\$ 289,368,750
Estimated SST Year 1 Payment	\$ 11,064,167	\$ 11,595,417	\$ 12,183,333	\$ 12,742,917	\$ 11,120,833	\$ 12,112,500	\$ 12,325,000	\$ 12,466,667	\$ 11,475,000	\$ 12,466,667	\$ 12,820,833	\$ 12,962,500

	FY24 Tax Rate		Annual AVG Taxpayer Share - Year 1										
Abington	\$ 13.38	\$ 325.08	\$ 341.61	\$ 358.14	\$ 374.67	\$ 325.08	\$ 358.14	\$ 363.65	\$ 363.65	\$ 336.10	\$ 369.16	\$ 374.67	\$ 380.18
Cohasset	\$ 12.17	\$ 51.53	\$ 51.53	\$ 64.41	\$ 64.41	\$ 51.53	\$ 64.41	\$ 64.41	\$ 64.41	\$ 51.53	\$ 64.41	\$ 64.41	\$ 64.41
Hanover	\$ 12.84	\$ 220.01	\$ 227.34	\$ 242.01	\$ 249.35	\$ 220.01	\$ 234.68	\$ 242.01	\$ 242.01	\$ 227.34	\$ 242.01	\$ 249.35	\$ 256.68
Hanson	\$ 13.38	\$ 359.91	\$ 374.91	\$ 394.90	\$ 414.89	\$ 359.91	\$ 394.90	\$ 399.90	\$ 404.90	\$ 369.91	\$ 404.90	\$ 414.89	\$ 419.89
Norwell	\$ 13.46	\$ 104.69	\$ 114.20	\$ 123.72	\$ 123.72	\$ 104.69	\$ 114.20	\$ 123.72	\$ 123.72	\$ 114.20	\$ 123.72	\$ 123.72	\$ 123.72
Rockland	\$ 14.06	\$ 376.20	\$ 395.74	\$ 415.28	\$ 434.82	\$ 381.08	\$ 415.28	\$ 420.17	\$ 425.05	\$ 390.85	\$ 425.05	\$ 439.71	\$ 444.59
Scituate	\$ 10.36	\$ 82.91	\$ 92.12	\$ 92.12	\$ 101.33	\$ 92.12	\$ 92.12	\$ 101.33	\$ 101.33	\$ 92.12	\$ 101.33	\$ 101.33	\$ 101.33
Whitman	\$ 12.74	\$ 503.10	\$ 526.61	\$ 554.82	\$ 578.33	\$ 503.10	\$ 550.12	\$ 559.53	\$ 564.23	\$ 521.91	\$ 564.23	\$ 583.04	\$ 587.74

	FY24 Tax Rate		Monthly AVG Taxpayer Share - Year 1										
Abington	\$ 13.38	\$ 27.09	\$ 28.47	\$ 29.85	\$ 31.22	\$ 27.09	\$ 29.85	\$ 30.30	\$ 30.30	\$ 28.01	\$ 30.76	\$ 31.22	\$ 31.68
Cohasset	\$ 12.17	\$ 4.29	\$ 4.29	\$ 5.37	\$ 5.37	\$ 4.29	\$ 5.37	\$ 5.37	\$ 5.37	\$ 4.29	\$ 5.37	\$ 5.37	\$ 5.37
Hanover	\$ 12.84	\$ 18.33	\$ 18.95	\$ 20.17	\$ 20.78	\$ 18.33	\$ 19.56	\$ 20.17	\$ 20.17	\$ 18.95	\$ 20.17	\$ 20.78	\$ 21.39
Hanson	\$ 13.38	\$ 29.99	\$ 31.24	\$ 32.91	\$ 34.57	\$ 29.99	\$ 32.91	\$ 33.33	\$ 33.74	\$ 30.83	\$ 33.74	\$ 34.57	\$ 34.99
Norwell	\$ 13.46	\$ 8.72	\$ 9.52	\$ 10.31	\$ 10.31	\$ 8.72	\$ 9.52	\$ 10.31	\$ 10.31	\$ 9.52	\$ 10.31	\$ 10.31	\$ 10.31
Rockland	\$ 14.06	\$ 31.35	\$ 32.98	\$ 34.61	\$ 36.24	\$ 31.76	\$ 34.61	\$ 35.01	\$ 35.42	\$ 32.57	\$ 35.42	\$ 36.64	\$ 37.05
Scituate	\$ 10.36	\$ 6.91	\$ 7.68	\$ 7.68	\$ 8.44	\$ 7.68	\$ 7.68	\$ 8.44	\$ 8.44	\$ 7.68	\$ 8.44	\$ 8.44	\$ 8.44
Whitman	\$ 12.74	\$ 41.93	\$ 43.88	\$ 46.24	\$ 48.19	\$ 41.93	\$ 45.84	\$ 46.63	\$ 47.02	\$ 43.49	\$ 47.02	\$ 48.59	\$ 48.98



# PROJECT COST UPDATE



February 15, 2024

## ESTIMATED Taxpayer Impact - Annually

**\*\*30 year Level Principal  
@ 3.75% assumed\*\***

	Option AR 1.0 805 Students	Option AR 1.0 900 Students	Option NC 2.0 805 Students	Option NC 2.0 900 Students	Option NC 2.1 805 Students	Option NC 2.1 900 Students
Estimated Total Project Budget	\$ 277,500,000	\$ 293,500,000	\$ 274,000,000	\$ 283,000,000	\$ 282,000,000	\$ 292,000,000
Estimated District Share	\$ 172,000,000	\$ 179,900,000	\$ 174,000,000	\$ 176,000,000	\$ 181,000,000	\$ 183,000,000
Estimated SST Bond Amount	\$ 271,975,000	\$ 284,466,875	\$ 275,137,500	\$ 278,300,000	\$ 286,206,250	\$ 289,368,750
Estimated SST Year 1 Payment	\$ 12,183,333	\$ 12,742,917	\$ 12,325,000	\$ 12,466,667	\$ 12,820,833	\$ 12,962,500

	FY24 Tax Rate	Annual AVG Taxpayer Share - Year 1					
Abington	\$ 13.38	\$ 358.14	\$ 374.67	\$ 363.65	\$ 363.65	\$ 374.67	\$ 380.18
Cohasset	\$ 12.17	\$ 64.41	\$ 64.41	\$ 64.41	\$ 64.41	\$ 64.41	\$ 64.41
Hanover	\$ 12.84	\$ 242.01	\$ 249.35	\$ 242.01	\$ 242.01	\$ 249.35	\$ 256.68
Hanson	\$ 13.38	\$ 394.90	\$ 414.89	\$ 399.90	\$ 404.90	\$ 414.89	\$ 419.89
Norwell	\$ 13.46	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72	\$ 123.72
Rockland	\$ 14.06	\$ 415.28	\$ 434.82	\$ 420.17	\$ 425.05	\$ 439.71	\$ 444.59
Scituate	\$ 10.36	\$ 92.12	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33	\$ 101.33
Whitman	\$ 12.74	\$ 554.82	\$ 578.33	\$ 559.53	\$ 564.23	\$ 583.04	\$ 587.74

Estimated Taxpayer Impact for comparison only and should not be used as a budget. These numbers will change as more information is known and the budget is defined.



# PROJECT COST UPDATE



February 15, 2024

## ESTIMATED Taxpayer Impact - Monthly

**\*\*30 year Level Principal  
@ 3.75% assumed\*\***

	Option AR 1.0 805 Students	Option AR 1.0 900 Students	Option NC 2.0 805 Students	Option NC 2.0 900 Students	Option NC 2.1 805 Students	Option NC 2.1 900 Students
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Estimated District Share	\$ 172,000,000	\$ 179,900,000	\$ 174,000,000	\$ 176,000,000	\$ 181,000,000	\$ 183,000,000
Estimated SST Bond Amount	\$ 271,975,000	\$ 284,466,875	\$ 275,137,500	\$ 278,300,000	\$ 286,206,250	\$ 289,368,750
Estimated SST Year 1 Payment	\$ 12,183,333	\$ 12,742,917	\$ 12,325,000	\$ 12,466,667	\$ 12,820,833	\$ 12,962,500

	FY24 Tax Rate		Monthly AVG Taxpayer Share - Year 1					
Abington	\$ 13.38	\$ 29.85	\$ 31.22	\$ 30.30	\$ 30.30	\$ 31.22	\$ 31.68	
Cohasset	\$ 12.17	\$ 5.37	\$ 5.37	\$ 5.37	\$ 5.37	\$ 5.37	\$ 5.37	
Hanover	\$ 12.84	\$ 20.17	\$ 20.78	\$ 20.17	\$ 20.17	\$ 20.78	\$ 21.39	
Hanson	\$ 13.38	\$ 32.91	\$ 34.57	\$ 33.33	\$ 33.74	\$ 34.57	\$ 34.99	
Norwell	\$ 13.46	\$ 10.31	\$ 10.31	\$ 10.31	\$ 10.31	\$ 10.31	\$ 10.31	
Rockland	\$ 14.06	\$ 34.61	\$ 36.24	\$ 35.01	\$ 35.42	\$ 36.64	\$ 37.05	
Scituate	\$ 10.36	\$ 7.68	\$ 8.44	\$ 8.44	\$ 8.44	\$ 8.44	\$ 8.44	
Whitman	\$ 12.74	\$ 46.24	\$ 48.19	\$ 46.63	\$ 47.02	\$ 48.59	\$ 48.98	

Estimated Taxpayer Impact for comparison only and should not be used as a budget. These numbers will change as more information is known and the budget is defined.

**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL DISTRICT**  
**436 Webster Street, Hanover, MA 02339**  
**JOINT MEETING OF**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL COMMITTEE**  
**AND**  
**SOUTH SHORE REGIONAL VOCATIONAL SCHOOL BUILDING COMMITTEE**  
**Thursday, February 22, 2024 – 6:00PM**

**AGENDA**  
**(Revised)**

1. **Call to Order of the School Committee and School Building Committee**
2. **Pledge of Allegiance**
3. **Agenda Items for the School Building Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Project Approvals (**Vote**)
    - 1) School Building Committee Meeting Minutes - January 17 and 25, 2024; February 8, 2024
    - 2) Invoices
  - d. OPM Updates
  - e. Vote on Preferred Design/Enrollment Option (**Vote**)
  - f. **Vote on Submission of the Preferred Schematic Report (Vote)**
  - g. Adjourn School Building Committee meeting (**Vote**)
4. **Agenda Items for the School Committee**
  - a. Agenda Adjustments
  - b. Public Comment
  - c. Approve Minutes (**Vote**)
    - 1) School Committee Meetings - January 17 and 25, 2024; February 8, 2024
  - d. Reports
    - 1) Treasurer
      - a) Monthly Report (**Vote**)
      - b) Budget Transfers (**Vote**)
      - c) Other Updates
    - 2) Superintendent-Director
      - a) Update on FY25 Budget
  - e. New Business
    - 1) 2024-25 Draft School Calendar
  - f. Request for Action
  - g. Adjourn School Committee Meeting (**Vote**)

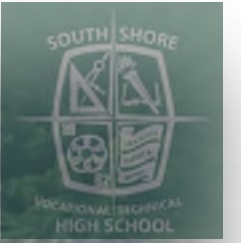
Note: The listings of matters are those reasonably anticipated by the Chair, which may be discussed at the meeting. Not all items listed may in fact be discussed, and other items not listed may also be brought up for discussion to the extent permitted by law.

*Posted February 21, 2024*



# SOUTH SHORE Technical High School

Hanover, Massachusetts



School Building Committee

February 22, 2024



100  
YEARS

DRA

# MEETING MINUTES



## **SUGGESTED VOTE:**

**Vote to approve meeting minutes from the January 17, 2023, January 25, 2024,  
and February 8, 2024 SBC Meetings.**



# DRA AMENDMENT #3

Total: \$6,435.00



<b>Fee for Basic Services</b>	<b>Original Contract</b>	<b>Previous Amendments</b>	<b>Amount of This Amendment</b>	<b>Total of All Amendments</b>
Feasibility Study/ Schematic Design Phase	\$1,000,000	\$ 59,950.00	\$ 6,435.00	\$ 1,066,385.00
<b>Total Fee</b>	<b>\$1,000,000.00</b>	<b>\$ 59,950.00</b>	<b>\$ 6,435.00</b>	<b>\$ 1,066,385.00</b>

## AMENDMENT SCOPE:

### LEED Registration:

Fee: \$1,350.00

10% DRA Markup: \$135.00

**Total LEED Registration: \$1,485.00**

### Additional Wetlands Survey,

### Updated Report & Plans:

Fee: \$4,500.00

10% DRA Markup: \$450.00

**Total LEED Registration: \$4,950.00**

# INVOICES

Total: \$96,485.00



INVOICES						
ProPay Code	Invoice Date	Vendor	Invoice #	Budget Category	Description of Services	Invoice \$
0001-0000	1/31/24	LeftField	10	OPM – Feasibility Study/ Schematic Design	OPM Feasibility Study Services January 1 – January 31, 2024	\$29,000.00
0001-0000	1/24/24	LeftField – AM Fogarty	24003	OPM – Feasibility Study/ Schematic Design	OPM Cost Estimating Consultant: <b>LeftField Invoice 10 Total: (For Reference Only)</b>	\$9,900.00 <b>\$38,900.00</b>
0002-0000	1/31/24	DRA	6	A/E - Feasibility Study/ Schematic Design	A/E Feasibility Study Services January 1 – January 31, 2024	\$27,500.00
0002-0000	1/31/24	DRA	A3-1	A/E - Feasibility Study/ Schematic Design	Amendments #3 – LEED for Schools Registration Amendments #1 & 5 - Preliminary Geotech Study,	\$1,485.00 \$28,600.00

**LeftField Total:  
\$38,900.00**

**DRA Total:  
\$57,585.00**



# BUDGET UPDATE



South Shore Regional Vocational Technical High School - Hanover, MA

February 22, 2024

## Total Project Budget Status Report

ProPay Code	Description	Total Project Budget	Authorized Changes	Revised Total Budget	Total Committed	% Cmtd to Date	Actual Spent to Date	% Spent to Date	Balance To Spend	Comments
<b>FEASIBILITY STUDY AGREEMENT</b>										
0001-0000	OPM Feasibility Study/Schematic Design	\$ 400,000	\$28,050	\$ 428,050	\$ 428,050	100%	\$ 265,900	62%	\$ 162,150	1
0002-0000	A&E Feasibility Study/Schematic Design	\$ 1,100,000		\$ 1,100,000	\$ 1,066,385	97%	\$ 539,446	49%	\$ 560,554	
0003-0000	Environmental & Site	\$ 300,000		\$ 300,000	\$ -	0%	\$ -	0%	\$ 300,000	
0004-0000	Other	\$ 200,000	\$ (28,050)	\$ 171,950	\$ -	0%	\$ -	0%	\$ 171,950	
	<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,494,435</b>	<b>75%</b>	<b>\$ 805,346</b>	<b>40%</b>	<b>\$ 1,194,654</b>	

<b>TOTAL PROJECT BUDGET</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,000,000</b>	<b>\$ 1,494,435</b>	<b>75%</b>	<b>\$ 805,346</b>	<b>40%</b>	<b>\$ 1,194,654</b>	
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FUNDING SOURCES	Max w/ Conting.	Max w/o Conting.	Project Budget	Scope Items Excluded	Contingencies	Basis of Total Facilities Grant	Reimbursement Rate
Maximum State Share	\$ 1,112,600	\$ 1,112,600					
Local Share	\$ 887,400	\$ 887,400					
<b>SUB-TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ 2,000,000</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>2,000,000</b>	<b>55.63%</b>

- All Contract Amendments have been committed against the original budget to indicate the remaining funds in each Budget Category
- All Invoices have been indicated in the Budget

**Committed: 75%**  
**Expended: 40%**

- Uncommitted Funds: \$505,565
- Anticipated Extra Services/ Reimbursables: \$200,000
- Remaining Funds: \$305,565

# PROJECT UPDATE



February 22, 2024

## Cost Comparison - NC 2.0

Design Enrollment	% Delta	Cost/SF PSR
645	AVG +3%* from 750	\$962.50
750	AVG +1.5%* from 805	\$934.47
805	From Estimate	\$920.66
900	From Estimate	\$880.72

645 and 750 Enrollment % deltas estimated from average estimate delta between 805 and 900 cost/sf to determine cost/sf drop off based on enrollment. Cost/sf goes up as enrollment goes down.

Cost/SF increases as design enrollment drops because:

- Specialized spaces (higher cost/sf) such as shops, kitchen, gymnasium, do not shrink much, if at all, with a reduction in students
- Shared spaces (gym, cafeteria, multipurpose auditorium, library, etc) do not shrink much, if at all, with a reduction in students
- Typical, more generic spaces (lower cost/sf) like academic classrooms and office space do shrink with enrollment

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.



# PROJECT UPDATE



February 22, 2024

## Cost Comparison – NC 2.0

Design Enrollment	% Delta	Cost/SF PSR
645	AVG +3%* from 750	\$962.50
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645 and 750 Enrollment % deltas estimated from average estimate delta between 805 and 900 cost/sf to determine cost/sf drop off based on enrollment. Cost/sf goes up as enrollment goes down.

Square Footage	Est. Const. Cost	+ Soft Costs	Est. Total Project Cost
203,480 (from PDP)	\$196 M	\$49M (25%)	\$245 M
228,540 (from PDP)	\$213 M	\$54M (25%)	\$267 M
237,175	\$218 M	\$56 M (est. backup)	\$274 M
256,350	\$226 M	\$57 M (est. backup)	\$283 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

# PROJECT UPDATE



February 22, 2024

## Cost Estimate Comparison – NC 2.0

	Option NC 2.0 New 645 Students	Option NC 2.0 New 750 Students	Option NC 2.0 New 805 Students	Option NC 2.0 New 900 Students
Estimated Construction Costs	\$196 M (\$963 / sf)	\$213 M (\$934 / sf)	\$218 M (\$920 / sf)	\$226 M (\$881 / sf)
Estimated Total Project Costs	\$245 M	\$267 M	\$274 M	\$283M
Estimated Effective MSBA Share	36% \$88 M	36% \$96M	36.34% \$100 M	37.89% \$107 M
Estimated District Share	64% \$157 M	64% \$171 M	63.66% \$174 M	62.11% \$176 M

645 and 750 Enrollments shown for comparison purposes only. The SBC had previously voted to eliminate these enrollments from further development and consideration.

Estimated MSBA Reimbursement Rates are **for COMPARISON PURPOSED ONLY** and are subject to change throughout the course of the Feasibility Study. The MSBA agrees to a reimbursement rate (which may be higher or lower than shown here) when they approve the Schematic Design Submission.

The estimated construction and total project cost provided are **for COMPARISON PURPOSES ONLY**. The estimated costs will be updated at the Schematic Design Report (SD) phase to inform the Total Project Budget that will be submitted to the MSBA. Estimated costs for 645 and 750 enrollments based on cost/sf only.











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### Civil Outline Specification

The following are the civil site systems specifications for the South Shore Vocational Technical High School in Hanover, MA, to define the scope of work for the current site for a new school through either a new building/campus or an addition/renovation project. The focus is on the current school campus located at 476 Webster Street.

## **1. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)**

### **A. DESCRIPTION OF WORK**

1. The stormwater pollution prevention measures contained in the SWPPP are the minimum required by the Town of Hanover Conservation Commission. The Contractor shall provide additional measures to prevent pollution from stormwater discharges in compliance with the NPDES and all other local, state and federal requirements.
2. For construction areas greater than 1-acre in size, the Contractor shall NOT begin construction without submitting evidence that a "National Pollution Discharge Elimination System" (NPDES) Notice of Intent governing the discharge of stormwater from the construction site for the entire construction period has been filed at least two days prior to construction. It is the Contractor's responsibility to complete and file the NPDES Notice of Intent.
3. The Contractor shall conduct the stormwater management practices in accordance with local regulations and governing authorities, the Federal NPDES permit requirements and for any enforcement action taken or imposed by Federal or State agencies. The cost of any fines, construction delays and remedial actions resulting from the Contractor's failure to comply with all provisions of local regulations and Federal NPDES permit requirements shall be paid for by the Contractor at no additional cost to the Owner.

### **B. INSPECTIONS**

1. The Contractor shall inspect disturbed areas of the site at least once per week and within 24 hours of a storm of 0.5 inches or greater. Such inspections may be performed in conjunction with the provisions for the maintenance of Erosion Control Measures in the Order of Conditions.
2. A maintenance inspection report shall be prepared after each inspection. The Contractor shall identify one individual who will be responsible for conducting inspections and preparing the reports. The Contractor shall also designate a person who will fill in for the inspector during absences. These individuals shall be trained in all maintenance and inspection practices necessary for keeping the sediment and erosion control measures in proper working order.

### **C. STORM WATER POLLUTION PREVENTION PRINCIPLES**

The following general principles shall be followed by the Contractor during the construction phase:

1. Protect and maintain existing vegetation wherever possible.
2. Minimize the area of disturbance.
3. To the extent possible, route unpolluted flows around disturbed areas.
4. Install mitigation devices as early as possible.



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5. Minimize the time disturbed areas are left unstabilized.
6. Maintain siltation control devices in proper condition.

## **2. EROSION AND SEDIMENTATION CONTROLS**

### **A. DESCRIPTION OF WORK**

1. Provide all labor, materials and equipment necessary to install proper control measures to prevent erosion, siltation and sedimentation of the Project site and adjacent and off-site areas.

### **B. MATERIALS**

1. Tubular Sediment Barrier: Tubular netting filled with water permeable compost material meeting the following requirements:
  - a. Compost:
    - i. Derived from a well-decomposed source of organic matter.
    - ii. Free of weeds, refuse, contaminants, or other materials toxic to plant growth. Non-composted products will not be accepted.
  - b. Tubular Netting:
    - i. One continuous barrier.
    - ii. Twelve inches in diameter.
    - iii. Equal to the following: 1) Silt Soxx by Filtrexx 2) Silt Sock 3) FilterMitt by Phase II Stormwater Products, Inc.
2. Catch basin Inserts: Permeable geotextile fabric that mounts under the grate of catch basins.
  - a. ACF Environmental Silt Sack
  - b. UltraTech International, Inc. Ultra-Drain Guard
  - c. Enpac 1341 Catch Basin Insert
  - d. Approved equal.

## **3. SITE CLEARING**

### **A. DESCRIPTION OF WORK**

1. Provide all labor, materials and equipment necessary to complete the work, including but not limited to the following:
  - a. Contractor to file a National Pollutant Discharge Elimination System (NPDES) permit with the Environmental Protection Agency (EPA) for Construction General Permit coverage (online submission). Contractor to review the Stormwater Pollution Prevention Plan provided for the project and implement the requirements prior and during the work required.
  - b. Removing surface debris.
    - a. Removing designated paving, curbs, and other site features.
    - b. Removing designated trees, shrubs, and other plant life within the Limit of Work area, as indicated on Drawings.
    - c. Tree protection.

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- d. Pedestrian protection.
  - e. Removing abandoned above and below grade utilities.
  - f. Excavating and stockpiling topsoil.
- B. REMOVAL
- 1. Remove and properly dispose of cleared material.
  - 2. Remove all surplus soil and unsuitable soil.
  - 3. Remove debris, rock, and extracted plant life from site.
  - 4. Remove paving and other site features.
  - 5. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.
  - 6. Continuously clean-up and remove trash, construction debris and waste materials from site. Do not allow materials to accumulate on site.
  - 7. Remove all temporary facilities at the end of the project.
  - 8. Separate recyclable materials removed during site clearing and store/stockpile without intermixing with other materials and reuse as indicated or transport them to a recycling facility.
  - 9. Do not burn or bury materials on site. Leave the site in clean condition.
- C. TOPSOIL EXCAVATION
- 1. Remove sod/grass before excavation of topsoil.
  - 2. Excavate topsoil from areas to be further excavated, re-landscaped, or regraded, to the depths encountered without mixing with underlying soils and foreign materials for use in finish grading.
    - a. Remove trash, debris, weeds, roots and other waste materials from stockpiled topsoil.
  - 3. Do not excavate wet topsoil.
  - 4. Transport topsoil and place in small stockpiles in locations requiring placement of topsoil.
  - 5. Stockpile in area designated on site to a height not exceeding 8 feet and protect from erosion.
    - a. Stockpile material on a level area until disposal.
    - b. Do not stockpile within the tree protection zones indicated on Drawings.
    - c. Stockpile topsoil away from the edge of excavations, do not intermix with subsoil.
    - d. Grade and shape stockpiles to drain surface water.
    - e. Cover to prevent windblown dust contamination by air borne weed seed.
    - f. Install temporary erosion control devices for all stockpiled soil, as indicated on Drawings and/or as directed by the Engineer to protect adjacent properties and/or resource areas.
  - 6. Remove excess topsoil not intended for reuse on the Project site.



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#### **4. WATER UTILITIES**

##### **A. DESCRIPTION OF WORK**

1. Furnishing and installation of water distribution pipe, valves and valve boxes, pipe fittings, anchors, thrust blocks, fire hydrants, water fountains, meter pit, required accessories and connections to existing water systems.
2. Disinfection and testing of the system.

##### **B. COORDINATION WITH THE MUNICIPALITY**

1. The municipal Water Department shall be notified prior to starting construction of any portion of the municipal water system.
2. The closing of valves necessary for making connections with existing municipal system will be done by the Water Department employees, assisted by the Contractor. Sufficient notice shall be given the Water Department of planned connection. No allowance will be made for any delay in closing of valves. 48-hour notice shall be given to residents or businesses affected by the shutdown and shall be done by the Contractor under the direction of the Engineer. The Water Department may require the work to be done at night during the low use time period.
3. Contact the municipal Water Department for water meter pit enclosure and internal piping specifications and requirements.

##### **C. DUCTILE IRON PIPE**

1. Ductile iron pipe shall be designed in accordance with ANSI A21.50/AWWA C150 and manufactured in accordance with ANSI A21.51/AWWA C151. Fittings shall be either mechanical joint or push-on joint complying with ANSI/AWWA C110/A21.10 or ANSI/AWWA C111/A21.11.
2. Ductile iron pipe shall be Thickness Class 52 furnished in 18-foot or 20-foot nominal lengths.
3. Restrained joint assemblies for mechanical fittings shall be Sigma Corp. One-Lok wedge action restraining gland or approved equivalent.
4. Pipes shall be cement-mortar lined in accordance with ANSI A21.4/AWWA C104, except that the cement lining shall be double thickness.
5. The exterior of all pipes shall be factory coated, with a double coat of asphaltic material conforming to ANSI A21.51/AWWA C151. The interior of all pipe shall have [a seal coat] of asphaltic material applied over the cement lining in accordance with ANSI A21.4/AWWA C104. [One Seal coat in Standard. Engineer to check with Municipality. Some require two seal coats].

##### **D. DUCTILE IRON PIPE FITTINGS**

1. All ductile iron pipe fittings shall conform to ANSI/AWWA C110/A21.10
2. All fittings shall be cement-mortar lined and coated as specified for pipe.

##### **E. DUCTILE IRON PIPE COUPLINGS**

1. Couplings and accessories shall be pressure rated at least equal to that of the pipe. Couplings shall be Dresser Style 153, Smith Blair 441 style or approved equivalent. The couplings shall be provided with corrosion resistant nuts and bolts.
2. Transition couplings for joining pipe of different diameters shall be Dresser Style 162 or approved equivalent. Coupling shall be provided with corrosion resistant nuts and bolts.

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3. After assembly, all exterior surfaces including the bolts and nuts shall be completely coated with two coats of a heavy-duty protective asphaltic coating. The interior of the coupling shall be epoxy-coated. Epoxy coating shall conform to AWWA C550.
- F. DUCTILE IRON PIPE JOINTS
1. Joints shall be either push-on or mechanical joints conforming to ANSI A21.11/AWWA C111. Push-on and mechanical joints shall be provided with required gaskets, lubricants and accessories conforming to ANSI A21.11/AWWA C111.
- G. GATE VALVES
1. Gate valves shall be resilient seated conforming to the requirements of AWWA C509 and of the type used by the Wellesley Water Department.
  2. Gate valves shall be cast iron body, bronze mounted, double disk, non-rising stem, O-ring type stuffing box.
  3. Gate valves shall open to the right [clockwise] and have mechanical joints.
  4. Bolts, studs and nuts shall be made from a corrosion-resistant material such as low-zinc bronze, nickel copper alloy, or stainless steel.
  5. Operating nut shall be 2 inches square at the base, tapering to 1-15/16 inches square at the top.
- H. VALVE BOXES
1. Each gate valve shall be provided with a valve box and cover.
  2. Valve boxes shall be of the adjustable, telescoping, heavy-pattern type designed and constructed to prevent the direct transmission of traffic loads to the pipe or valve.
  3. Valve boxes shall be cast iron, asphalt coated with cast iron covers. The smallest inside diameter of the shaft shall not be less than 5-1/4 inches. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve. Provisions shall be made for adjustment through at least 6-inches vertically while retainage lap of at least 4 inches between sections.
  4. Covers shall be close fitting and substantially dirt-tight. The top of the cover shall be flush with the top of the box rim. The word WATER shall be cast in the top surface of the cover.
- I. CORPORATION STOPS AND CURB STOPS
1. Corporation stops shall be Mueller 300 ball type corporation valves threaded to receive compression-type fitting, or approved equivalent.
  2. Curb stops shall be Mueller 300 ball valve curb stop or approved equivalent, threaded to receive compression-type fittings.
  3. Stops shall be sized to receive the service tubing without the use of enlargement/reduction fittings.
- J. SERVICE BOXES
1. Service boxes shall be cast iron improved extension type with arch pattern base. Covers shall be held in place with bronze bolts and the word WATER shall be cast onto the top surface of the cover. Service box shafts shall have a minimum inside diameter of 2-1/2 inches. Service boxes shall be manufactured by Mueller Corp. or approved equivalent.



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K. FIRE HYDRANTS

1. Fire hydrants shall be Muller Super Centurion Model No. A-422 per Town of Hanover Water Department requirements.

L. JOINTING DUCTILE IRON PIPE [PUSH-ON TYPE]

1. Push-on joints shall be made in strict accordance with the manufacturer's instructions. A rubber gasket shall be inserted in the groove of the bell end of the pipe and the joint surface cleaned and lubricated using the pipe manufacturer's suggested methods and materials. The plain end of the pipe to be laid shall be inserted in alignment with the bell of the pipe to which it is to be jointed and pushed home with a jack or by other means. After joining the pipe, a metal feeler gauge shall be used to make certain that the rubber gasket is correctly located and has not been twisted or otherwise displaced.

M. JOINTING MECHANICAL JOINT PIPE AND FITTINGS

1. Mechanical joints shall be made in strict accordance with the manufacturer's instructions. Mechanical joints shall be made by first cleaning the surfaces against which the gaskets will come in contact with a wire brush. The gasket, bell, and spigot shall be lubricated by washing with soapy water just prior to assembling the joint. After the nuts have been made up finger tight, the bottom nut, then top and then diametrically opposite nuts shall be progressively tightened. Bolts shall be tightened to the torques listed:

Bolt Size	Range of Torque
<u>[Inches]</u>	<u>[Feet-Pounds]</u>
5/8	45 - 60
3/4	75 - 90
1 inch	85 - 100

Under no conditions shall extension wrenches or a pipe over the handle of an ordinary ratchet wrench be used to secure greater leverage. After installation, a heavy bitumastic coating shall be applied to all bolts and nuts.

Restraining device shall be ductile iron and shall have dimensions such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA Z21.11 and ANSI/AWWA C153 latest revision.

N. CONCRETE THRUST BLOCKS

1. Where pipes change horizontal and vertical direction, at hydrants, tees and other fittings, and wherever abnormal thrust forces may be developed, the Contractor shall construct thrust and anchor blocks as detailed on the Drawings. They shall be concrete, of minimum dimensions as detailed on the Drawings or of adequate additional size to suit actual conditions to withstand pressures anticipated and shall be founded in undisturbed soil.
2. Concrete for thrust blocks shall have a minimum 28 day's compressive strength of 3,000 psi.
3. Fittings which do not use thrust blocks resting against natural occurring material with passive resistance pressure of 1,500 psf shall be installed with a restrained joint system as specified in Article 3.06.

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O. RESTRAINED JOINTS

1. Pipe with restrained joints shall be installed at locations shown on the Drawings. Restrained joints shall be installed at bends, reducers, tees, valves, dead ends, and hydrants. The minimum length of pipe to be restrained on either side of the joint shall be as shown on the table below. The fittings of the new piping shall be for restrained joints, as marked on the Drawings.

Number of Joints to Restraint  
on Either Side of Fitting

<u>Fitting</u>	<u>Number of Joints to Restraint on Either Side of Fitting</u>
90-degree bend	3
45-degree bend	2
22-1/2-degree bend	2
Tee:	
Branch	3
Run	2

2. No restraining is required in the direction of the existing pipe if only a short length of it is exposed in the trench for making a connection.
3. Restrained joint assemblies for push-on pipe and fittings shall be made in strict accordance with the manufacturer's recommended installation procedures.
4. Restrained joint assemblies for mechanical joint pipe shall be Sigma Corp. One-Lok wedge action restraining gland.

P. GATE VALVES AND BOXES

1. Valves shall be set in firmly compacted and shaped soil. Where the soil in the trench subgrade is found to be soft, loose, freshly filled earth, unstable or unsuitable as a base, the unsuitable material shall be excavated to such additional depth and width as required. The excavated area shall be backfilled with gravel or crushed stone, compacted and shaped.
2. Valve boxes shall be set centered and plumb over the operating nuts of all valves. The top of each valve box shall be set to finished grade with at least 10 inches of overlap remaining between the upper sections for vertical adjustment. Minimum overlap for lower, extension pieces shall be 4 inches.
3. Boxes shall be adequately supported during backfilling to maintain vertical alignment.



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**Q. TAPPING SLEEVES AND GATE VALVES**

1. Installation shall be made under pressure and the flow of water through the existing pipe shall be maintained at all times. The diameter of the tap shall be a minimum of 1/4 inch less than the inside diameter of the branch line.
2. The entire operation shall be conducted by workmen thoroughly experienced in the installation of tapping sleeves and valves, and under supervision of qualified personnel furnished by the manufacturer. The tapping machine shall be furnished by the Contractor.
3. The Contractor shall determine the location of the existing pipe to be tapped to confirm that interference will not be encountered from existing utilities or a joint or a fitting. No tap shall be made closer than 3 feet from a pipe joint.
4. Pipe upon which tapping sleeve is to be installed shall be thoroughly cleaned of all foreign matter with scraping tools and wire brushes to a minimum of six inches beyond each side of the sleeve. The cleaned area shall be washed with a hypochlorite solution. The interior of tapping valve shall also be washed with hypochlorite solution.
5. Tapping sleeves and valves with boxes shall be set vertically and squarely centered on the pipe to be tapped. Adequate support shall be provided under the sleeve and valve during the tapping operation. Thrust blocks shall be provided behind all tapping sleeves. The supporting earth around and under the valve and sleeve shall be compacted. After completing the tap, the valve shall be flushed to ensure that the valve set is clean.
6. Before backfilling, all exposed portions of any bolts used to hold the two halves of the sleeve together shall be heavily coated with two coats of bituminous paint equivalent to Bitumastic No. 50, by Kopper Company, Inc.

**R. HYDRANTS**

1. Hydrants shall be installed at the locations and in conformance with the details shown on the drawings.
2. Each hydrant shall be set vertically and be properly braced. Hydrants shall be installed with thrust blocks or restrained joints as specified in Articles 3.05 and 3.06. Care shall be taken to ensure that thrust block concrete does not plug the drain ports.

**S. WATER SERVICES**

1. Service Pipe: Care shall be exercised in placing and laying of services to prevent kinks or sharp bends and contact with sharp stones or ledge which would damage to the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.
2. Corporation Stop: Taps to the pipe shall be threaded and shall be made at the horizontal diameter of the main. The tap shall be made by means of a tapping machine manufactured for this purpose and supplied by the Contractor. The tap and drill shall be kept sharp and shall have threads matching those of the stop. Corporation stop threads shall be coated with sealing compound and the stop screwed firmly into the water with the key upward and the inlet end projecting at least 1/8-inch beyond the inside face of the pipe. Corporation stop shall be left in the on open position after installation of the service pipe.
3. Curb Stop and Curb Boxes shall be of a size equal to the size of the service pipe and shall be installed in the locations shown on the Drawings or as ordered by the Engineer. The boxes shall be set in a vertical position and flush with the proposed finish grade.

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4. Ductile Iron Service Pipe: Ductile iron service pipe connections to the water pipe shall be made with tee fittings or tapping sleeves.

**5. SANITARY UTILITY SEWAGE PIPING**

**A DESCRIPTION OF WORK**

1. The Contractor shall furnish all labor, tools, equipment, materials, and services necessary to lay, join and test all PVC pipe and fittings, and appurtenant materials as shown on the Contract Drawings and as specified herein.

**C. PVC - PRESSURE PIPE**

1. The PVC pressure pipe shall be Class 150 or DR18 unless otherwise specified and conform to ANSI/AWWA C-900 standard for PCV Pressure Pipe. PVC pipe shall meet the criterial for ASTM D-2241 "Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-PR)". PVC Class 150 Pipe shall be manufactured to dimensions of standard Cast Iron Pipe outside diameters instead of dimensioning according to Iron Pipe Standards (I.P.S.). PVC pipe (SDR-18) shall meet all requirement of Uni-Bell Standard Uni-B-2-72. Class 150 pipe and couplings shall meet the following requirements:

<u>Physical Property</u>	<u>Requirement</u>	<u>Test Method</u>
90 Second Minimum		
Burst Pressure	755 PSI	ASTM D-1599
Sustained Pressure	500 PSI	ASTM D-1598
		ASTM D-2241
Impact	100 Ft.-lbs.	ASTM D-2444
Hydrostatic Integrity	Non-Failure	ANSI/AWWA C 900-81 Section 3.1.1
Flattening	Non-Failure	ASTM D-2412
Extrusion Quality	Non-Failure	ASTM D-2152
Coupling Pressure Seal	Non-Failure of Seal	ASTM D-3139

**D. PVC PIPE - GRAVITY SEWER AND DRAIN**

1. PVC pipe 8" through 15" shall be SDR 35 unless otherwise specified and shall conform to ASTM D3034 Standard for PVC pipe. PVC pipe 18" through 27" shall be Type 1 heavy wall unless otherwise specified and shall conform to ASTM F679-80 standard for PVC pipe. The PVC pipe shall be supplied in lengths of 13 or 20 feet.
2. Except as indicated differently on the Contract Drawings or in the specifications or where specifically directed by the Engineer, pipe shall be furnished with standard integral bell and spigot ends and elastomeric gasket joint.
3. PVC tees, wyes and tee wyes shall be PVC SDR 35 fittings with ring tight joints. All fittings shall be capped.

**E. PUSH-ON JOINTS**

1. Push-on joints shall consist of 1) a single continuous, molded, rubber, ring gasket, 2) a bell socket cast integrally with the pipe or fitting and 3) a pipe or fitting plain end. The



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configuration shall be such that when the plain end is inserted into the pipe fitting socket the gasket shall be compressed radially to form a positive seal. The gasket and annular space shall be so designed and shaped that the gasket is locked in place after the plain end is inserted into the fitting socket.

2. Push-on joints shall have the same pressure rating as the pipe or fitting of which they are a part.
3. Gaskets for push-on joints shall be vulcanized natural or synthetic rubber. All gaskets shall be free of porous areas, foreign material and visible defects.

**F. PVC BELL (INTEGRALLY CAST)**

1. The bell shall consist of an integral wall section with locked-in, solid cross section elastomeric ring which meets the requirements of ASTM F-477. The bell section shall be designed to be at least as hydrostatically strong as the pipe wall and meet the requirements of AWWA C-900.

**G. SOLVENT WELD JOINTS**

1. Where solvent weld joints are required, they shall be made with solvent supplied by the pipe manufacturer's specifications or with ASTM Recommended Practice D2855. The dry fit of joints shall be snug; pipe and fittings which afford loose fits will be rejected by the Engineer. The use of multiple layers of filler solvent to overcome a loose fit will not be permitted. Solvent cements shall conform to ASTM D-2564.

**H. PIPE MARKINGS**

1. Pipe and couplings shall bear identification markings that will remain legible during normal handling, storage, installation and during the life of the pipe. Markings shall have been applied to the pipe and couplings in a manner which will not reduce strength or durability or otherwise damage the pipe.
2. Markings for pressure pipe shall be applied at intervals of not more than 5 Feet and shall include the following: nominal size and OD base, "PVC", dimension-ratio number, AWWA pressure class, AWWA designation number for AWWA C-900, manufacturer's name or trademark and production record code, and mark or seal of pipe testing agency.
3. Coupling markings shall include the following: nominal size and OD base, "PVC" dimension-ratio number, AWWA designation number for AWWA C-900, manufacturer's name or trademark and mark or seal of pipe testing agency.

**6. STORMWATER UTILITIES**

**A. DESCRIPTION OF WORK**

1. Work under this Section includes furnishing all plant labor, equipment, appliances, and materials, and performing all operations in connection with the construction of stormwater collection systems at the locations and to the lines and grades indicated on contract drawings and/or directed.
2. Any manufacturer's names and/or model numbers identified herein are intended to assist in establishing a general level of quality, configuration, functionality, and appearance required. This is NOT a proprietary specification, and it should be noted that "Or equal" applies to all products denoted herein. It is understood that all manufactures will have minor variations in configuration, appearance, and product specifications and such minor variations shall not eliminate such manufacturers as an equal". It is the intent of this specification to encourage open and competitive involvement from multiple manufacturers that are able to supply similar products.

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**B. HIGH DENSITY POLYETHYLENE PIPE (HDPE):**

1. High-Density Polyethylene Pipe and fittings shall be ADS N-12 IB ST Smooth Interior Pipe, ADS N-12 IB ST High-Capacity Large Diameter Pipe or approved equivalent. Joints shall be soil-tight and include a rubber gasket on the spigot end of the pipe. When installed into the bell end, the joint shall be sealed.
2. Pipe shall conform to AASHTO M294 (Type 'S') for the specified diameters and strength classes.
3. Pipe shall be rated to withstand H-20 Loading Criteria with 18" of cover.

**C. REINFORCED CONCRETE PIPE AND FITTINGS:**

- 1 Reinforced-Concrete Pipe and Fittings: ASTM C 76 (ASTM C 76M), with bell-and- spigot ends and sealant joints with ASTM C 990 (ASTM C 990M), bitumen or butyl- rubber sealant.
- 2 Pipe shall conform to AASHTO M170 for the specified diameters and strength classes. The minimum cement content shall be 564 pounds per cubic yard.
- 3 Strength class of reinforced concrete pipe shall be Class III unless specified otherwise on the drawings. Reinforced concrete pipe located less than six inches below vehicular pavement subgrade shall be Class V.
- 4 Joint of reinforced concrete pipe shall be made with flexible watertight rubber gaskets and the remaining exterior void of the joint shall be sealed with Portland cement mortar.

**D, PVC PIPE AND FITTINGS**

1. PVC Profile Gravity Sewer Pipe and Fittings: ASTM F 794 pipe, with bell-and-spigot ends; ASTM D 3034 fittings, with bell ends.
2. The pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusion or other injurious defects. The pipe shall be as uniform as commercially practical in color, capacity, density and other physical properties.
3. Joints shall be bell and spigot. For SDR-35 PVC pipe, the bell shall consist of an integral wall section with a solid cross section rubber ring factory-assembled, securely locked in place to prevent displacement. Joints shall conform to ASTM Standard D 3212. For SCH 40 PVC piping, joints shall be glued with PVC cement approved by the manufacturer.
4. All fittings and accessories shall have dimensions as recommended by the manufacturer and have bell and/or spigot configurations compatible with that of the pipe.
5. Pipe shall pass impact resistance test in accordance with ASTM D 2444 and minimum pipe stiffness test at 5% deflection in accordance with ASTM D 2412.
6. The normal length of 12-inch size and smaller pipe shall be 12.5 feet.
7. Pipe and fittings shall be manufactured in the United States of America and shall be accompanied by the manufacturer's certificate of compliance, in addition to meeting the performance tests specified hereinafter.
8. PVC pipe shall be SCH 40 where pipe has less than 2 feet of cover or as indicated on the plans.
9. PVC perforated pipe shall conform to ASTM/ANSI D 2759 or ASTM F 810. Perforations shall be 5/8" holes on 5" centers.



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E. STORM DRAIN MANHOLES AND CATCH BASINS

1. Precast Units

- a. Structure: 48-inch minimum inside diameter, precast concrete units (4,000 psi minimum compressive strength) with eccentric cone section tapering to 24-inch diameter and monolithic base section meeting the requirements of ASTM C478. All structures shall be designed for HS-20 loading.
- b. Precast Unit Joint Seals: Butyl rubber O-ring type seals meeting the requirements of ASTM C990.
- c. Openings for pipe and materials to be embedded in the walls of the manholes sections for joint seals shall be cast in the sections at the required locations during manufacture. Sections with incorrectly cast and patched pipe openings will be rejected.
- d. Openings shall be cast into the manhole sections to receive entering pipes during manufacture. The openings shall be sized to provide a uniform 2-inch maximum annular space between the outside of the pipe wall and the opening in the riser. After the pipe is in position, the annular space shall be solidly filled with nonshrink mortar. Care shall be taken to assure that the openings are located to permit setting of the entering pipe at its correct elevation.
- e. The date of manufacture, trademark and name of the manufacturer shall be clearly marked on the inside of each precast section.

2. Masonry Units

- a. Brick shall conform to Sewer Brick (Made from Clay or Shale), ASTM designation C32, Grade MS or Building Brick (Solid Masonry Units Made from Clay or Shale), ASTM C62, Grade SW.
  - b. Concrete block shall be solid block and shall conform to the Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, ASTM designation C139.
  - c. Mortar shall be in conformance with ASTM C270, Type M. The mortar shall be composed of Portland cement hydrated lime, and sand, in the proportions of 1-part cement to 1/4-part hydrated lime to 3-1/2 parts sand by volume.
  - d. Cement shall be Type I or II Portland cement conforming to ASTM C150, Standard Specification for Portland Cement. Where masonry is exposed to salt water, Type II shall be used.
  - e. Hydrated lime shall be Type S conforming to ASTM D207.
  - f. Sand for masonry mortar shall conform to the gradation requirements of ASTM C144.
3. Steps for manholes shall be Steel Reinforced Copolymer Polypropylene plastic step with at least a 14-inch wide stepping surface conforming to ASTM C478 and A615.
  4. Manhole Frame and Cover: Grey iron casting conforming to ASTM A48, heavy duty, with word "DRAIN" embossed on cover. Letter size shall be three inches. Frame and cover shall be Town of Hanover standard, East Jordan Iron Works Product No. 0MA211000028 (8" Frame), 0MA211000041 (Cover), or approved equal.
  5. Catch Basin Frame and Grate: Grey iron casting conforming to ASTM A48, heavy duty grate. Frame and grate shall be Town of Hanover standard, East Jordan Iron Works Product No. 0MA552000028 (3 Flange) or 0MA552000029 (4 Flange) or approved equal.

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F. CATCH BASIN HOODS

1. All catch basin outlet pipes shall be fitted with catch basin hoods.

G. STORMWATER HYDRODYNAMIC SEPARATOR

1. Acceptable suppliers may be Hydro International, First Defense, or approved equivalent.

- a. Materials and Design

1. Concrete for precast stormwater treatment systems shall conform to ASTM C857 and C478 and meet the following additional requirements:
2. In all cases the wall thickness shall be no less than the minimum thickness necessary to sustain HS20 loading requirements.
3. Sections shall have tongue and groove or ship-lap joints with a butyl mastic sealant conforming to ASTM C990.
4. Cement shall be Type I, II, or III Portland cement conforming to ASTM C150.
5. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi (28 MPa) or other designate suitable handling strength.
6. Pipe openings shall be sized to accept pipes of the specified size(s) and material(s), and shall be sealed by the Contractor with a hydraulic cement conforming to ASTM C595M.

H. AREA DRAINS

1. Manufacturer shall be Nyloplast, or approved equivalent.
2. PVC surface drainage inlets shall include the drain basin type as indicated on the contract drawing and referenced within the contract specifications.
3. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer.
4. Drain basins grates in hardscaped areas shall be ADA compliant. Drain basin grates in landscaped areas shall be standard grates.
5. The drain basins required for this contract shall be manufactured from PVC pipe stock, utilizing a thermoforming process to reform the pipe stock to the specified configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe bell spigot shall be joined to the main body of the drain basin or catch basin. The raw material used to manufacture the pipe stock that is used to manufacture the main body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.
6. The grates and frames furnished for all surface drainage inlets shall be ductile iron and shall be made specifically for each basin to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for drain basins shall be capable of supporting various wheel loads as specified.



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I. SUBSURFACE INFILTRATION AND DETENTION SYSTEMS

A. Chamber parameters

1. The chambers shall be manufactured in the U.S.A. or Canada by Cultec, inc. of Brookfield, CT. (203-775-4416 or 1-800-428-5832)
2. The chambers shall be designed and tested in accordance with ASTM F2787 "standard practice for structural design of thermoplastic corrugated wall stormwater collection chambers".
3. The chambers shall meet the requirements of ASTM F3430-20 "standard specification for cellular polypropylene (pp) corrugated wall stormwater collection chambers".
4. The installed chamber system shall provide resistance to the loads and load factors as defined in the AASHTO LRFD bridge design specifications section 12.12, when installed according to recommended installation instructions. The structural design of the chambers shall include the following:
  - a. The creep modulus shall be 50-year as specified in ASTM F3430
  - b. The minimum safety factor for live loads shall be 1.75
  - c. The minimum safety factor for dead loads shall be 1.95
5. The chamber shall be structural foam injected molded of blue virgin high molecular weight impact-modified polypropylene.
6. The chamber shall be arched in shape.
7. The chamber shall be open-bottomed.
8. The chamber shall be joined using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings.
9. Multiple chambers may be connected to form different length rows. Each row shall begin and end with a separately formed end cap. Maximum inlet opening on the end cap is 24-inch (600 mm) HDPE or 30-inch (750mm) PVC.
10. The chamber shall have two side portals to accept connectors to create an internal manifold. Maximum allowable pipe size in the side portal is 10-inch (250mm) HDPE or 12-inch (300mm) PVC.
11. Maximum allowable cover over the top of the chamber shall be 12.0 feet (3.66 m).

B. End Cap Parameters

1. The end cap shall be structural foam injection molded of blue virgin high molecular weight impact-modified polypropylene.
2. The end cap shall be arched in shape.
3. The end cap shall be open-bottomed.
4. The end cap shall be joined at the beginning and end of each row of chambers using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings.
5. The end cap shall have 5 corrugations.

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6. The nominal dimensions of the end cap shall be 36.5 inches (927 mm) tall, 60 inches (1525 mm) wide and 18 inches (458 mm) long.
7. Maximum inlet opening on the end cap is 24-inch (600 mm) HDPE or 30-inch (750mm) PVC.
8. The end cap shall provide resistance to the loads and load factors as defined in the AASHTO LRFD bridge design specifications section 12.12.

J. TRENCH DRAINS

1. Acceptable products for this application include Poly drain by ABT Inc., ACO, Duraslope by NDS, EconoDrain EPS Trench Drain Forming System Series #12 Trench Drain, or Approved Equivalent.

K. EPDM SHEET MATERIALS

1. EPDM Sheet: Formulated from EPDM, compounded for use in hydraulic structures and formed into uniform, flexible sheets.
  - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - i. Firestone Building Products.
    - ii. Raven Industries, Inc.
    - iii. Yunker Plastics, Inc.
  - b. Reinforcing Scrim: One-ply polyester fabric totally encapsulated between two sheets.
    - i. Construction: 10 x 10 - 1000 d.
  - c. Nominal Thickness: 45-mil- thick sheet per ASTM D 5199 or ASTM D 751, Optical Method.
  - d. Breaking Strength: Not less than 190 lbf minimum average per ASTM D 882, ASTM D 7004, or ASTM D 751, Procedure A.
  - e. Tear Resistance: Not less than 130 lb minimum average per ASTM D 1004.
  - f. Puncture Strength: Not less than 60 lbf minimum average per ASTM D 4833.

L. MANHOLES

1. Manholes shall be constructed at the locations and to the lines, grades, dimensions and design shown on Drawings or as required by the Engineer.
2. Precast Concrete Units shall be installed in a manner that ensures watertight construction and all leaks in precast concrete structures shall be sealed. If required, precast concrete structures shall be repaired or replaced to obtain watertight construction.
3. Stubs shall be short pieces of pipe cut from the bell ends of the pipe. Stubs shall be plugged with brick masonry unless otherwise directed by the Engineer.
4. Manhole Inverts shall conform accurately to the size of the adjoining pipes.
  - a. Manhole inverts shall be constructed of 3,500 psi concrete as shown the Drawings.
  - b. Inverts shall be laid out in smooth diameter curves of the longest possible radius to provide uniform flow channels.



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- c. Invert shelves shall be graded with a 1-inch drop per 1-foot length sloped from the manhole walls.
  5. Manhole steps shall be accurately positioned and embedded in the concrete when the section is cast. Precast-reinforced concrete manhole sections shall be set vertical and with sections and steps in true alignment.
  6. All holes in sections used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch, hammered into the holes until it is dense and an excess of paste appears on the surface, and finished smooth and flush with the adjoining surfaces.
  7. Precast sections shall be level and plumb with approved joint seals. Water shall not be permitted to rise over newly made joints until after inspection and acceptance. All joints shall be watertight.
  8. Openings which have to be cut in the sections in the field shall be carefully made to prevent damage to the riser. Damaged risers will be rejected and shall be replaced at no additional cost to the Owner.
- M. BRICK MASONRY
1. Brick masonry structures shall be watertight. All leaks in brick masonry structures shall be sealed. All brick masonry shall be laid by skilled workmen.
  2. All beds on which masonry is to be laid shall be cleaned and wetted properly. Brick shall be wetted as required to be damp, but free of any surface water when placed in the work. Bed joints shall be formed of a thick layer of mortar which shall be smoothed or furrowed slightly. Head joints shall be formed by applying a full coat of mortar on the entire brick end, or on the entire side, and then shoving the mortar covered end or side of the brick tightly against the bricks laid previously. The practice of buttering at the corners of the brick and then throwing the mortar or crappings in the empty joints will not be permitted. Dry or butt joints will not be permitted. Joints shall be uniform in thickness and approximately 1/4 inch thick.
  3. Brickwork shall be constructed accurately to the required structure dimensions and tapered at the top to the dimensions of the flanges of the cast-iron frames, as shown on the Drawings.
  4. Joints on the inside face of walls shall be tooled slightly concave with an approved jointer when the mortar is thumbprint hard. The mortar shall be compressed with complete contact along the edges to seal the surface of the joints.
  5. All castings to be embedded in the brickwork shall be accurately set and built-in as the work progresses.
  6. Water shall not be allowed to flow against brickwork or to rise on the masonry for 60 hours after it has been laid, and any brick masonry damaged in this manner shall be replaced as directed at no additional cost to the Owner. Adequate precautions shall be taken in freezing weather to protect the masonry from damage by frost.
- N. CONCRETE MASONRY UNITS
1. Concrete masonry units shall be soaked in water before laying. As circular concrete block walls are laid-up, the horizontal joints and keyways shall be flushed full with mortar. As rectangular blocks are laid-up, all horizontal and vertical joints shall be flushed full with mortar. Plastering of the outside of block structures will not be required. No structure shall be backfilled until all mortar has completely set.

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O. MANHOLE STEPS

1. Steps shall be cast into the precast walls during manufacture.
2. Steps in brick masonry and concrete units shall be installed as the masonry courses are laid.

P. CASTINGS

1. Cast-iron frames for grates and covers shall be well bedded in cement mortar and accurately set to the proposed grades.
2. All voids between the bottom flange and the structure shall be completely filled to make a watertight fit. A ring of mortar, at least one-inch thick and pitched to shed water away from the frame shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.
3. Structures within the limits of bituminous concrete pavement shall be temporarily set at the elevation of the bottom of the binder course. After the binder course has been compacted, the structures shall be set at their final grade. Backfill necessary around such structures after the binder course has been completed shall be made with 3,500 psi concrete.

**7. AGGREGATE BASE COURSES**

A. MATERIALS

1. Subbase Aggregate: Gravel Borrow, MassDOT M1.03.0, Type b. Refer to Construction Drawings for depths.

Sieve Size	Percent Passing
3"	100
1/2"	50-85
#4	40-75
#50	8-28
#200	0-10

2. Subbase Aggregate: Gravel Borrow, MassDOT Dense Graded Crushed Stone (M2.01.7). Refer to Construction Drawings for depths.

Sieve Size	Percent Passing
2"	100
1-1/2"	70-100
3/4"	50-85
#4	30-55
#50	8-24
#200	3-10



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**8. ASPHALT PAVING**

**A. DISTURBING EXISTING PAVEMENT DURING CONSTRUCTION**

- 1 Existing paved areas shall be protected from damage by construction activities to the extent possible. Where sections of the finished paved areas have to be removed, the edges shall be saw cut in all cases and patched.
2. Existing finished paved areas that require extensive cutting and patching or have become damaged and cannot be satisfactorily repaired by cutting and patching shall be resurfaced. These resurfaced areas shall be large enough to be applied by paving machines. Shape of these resurfaced areas shall be near and in rectangular patterns or shall conform to the shape or edges of other adjacent surface improvements. Edges of resurfaced areas shall be saw cut and existing pavements shall be removed from a distance of two feet into areas to be resurfaced, so that new pavement can neatly blend into existing pavement showing no joints or imperfections. If the gravel base course has been disturbed, the Contractor shall remove the disturbed material, repair the existing gravel base and apply a new binder course as specified herein.
3. All paving beyond the project’s property line shall be in accordance with the requirements of the authority having jurisdiction. Provide traffic control for any work within the Town’s Right-of-Way.

**B. MATERIALS AND PRODUCTS**

1. Course Aggregate: In accordance with Massachusetts Department of Transportation – Highway Division standards.
2. Fine Aggregate: The fine aggregate must consist of one of the following:
  - a. 100% Natural Sand
  - b. 100% Stone Sand
  - c. A blend of natural sand and stone sand
  - d. The fine aggregate, as delivered to the mixes, must meet the following gradation requirement.

Sieve	Percent Passing	
	Minimum	Maximum
3/8 inch	95	100
No. 8	70	95
No. 50	20	40
No. 200	2	16

- e. In the fine aggregate sieve analysis (passing No. 8), the amount between two successive sieves (No. 16, 30, 50, and 100) must not exceed 33 percent of the fine aggregate total.
3. Mineral Filler: ASTM D242 or AASHTO M17; Rock or slag dust, Portland cement, or other inert material or finely ground mineral particles, free of foreign matter.
4. Reclaimed Asphalt Pavement (RAP): Provide material obtained from the highways or streets by crushing, milling, or planing existing hot mix asphalt pavements.

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- a. Proportion of RAP to virgin aggregate for base course mixtures and intermediate course mixtures maximum amounts:
  - i. 20% for drum mix plants
  - ii. 20% for modified batch plants
  - iii. 10% for surface course mixtures

5. Aggregate Subbase: Specified in Section 32 11 23

**C. MIXES**

1. Provide asphalt aggregate mixture in compliance with Section 460, Paragraph 460.40, MassDOT and as follows:
2. Binder Course and Top Course: Provide HMA Intermediate Course Dense Binder and HMA Surface Course – Standard Top conforming with the Job-Mix Formula given in Table A of Section M, paragraph M3.11.03, MassDOT.
3. The Binder Course shall be a minimum of 2 1/2 inches thick. The aggregate for the binder course shall conform to the following gradation requirements:

Sieve Size	Percent Passing
1"	100
3/4"	80-100
1/2"	65-80
#4	48-65
#8	37-49
#30	17-30
#50	10-22
#20	0-6
Binder	5-6

4. The Top Course shall be a minimum of 1-1/2 inches thick but shall not be less than the thickness indicated on the Drawings. The aggregate for the top course shall conform to the following gradation requirements:

Sieve Size	Percent Passing
5/8"	100
1/2"	95-100
3/8"	80-100
#4	50-76
#8	37-49
#16	26-40
#30	17-29
#50	10-21
#100	5-16
#200	2-7
Binder	5.6-7.0

**9. PAVEMENT MARKINGS**

**A. MATERIALS**

1. The paint shall be a non-bleeding, quick-drying, alkyd petroleum base paint suitable for traffic-bearing surface and shall meet FS TTP-85E and mixed in accordance with manufacture's instructions before application.



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- B. The following items shall be painted with the colors noted below:
1. Lane Striping where separating traffic in opposite directions: Yellow
  2. Lane Striping where separating traffic in the same direction: White
  3. Handicap Symbols: White
  4. Parking Stall Striping: White





# **SOUTH SHORE VOCATIONAL TECHNICAL HS**

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## **ELEMENT G SITEWORK**

### **G10 SITE PREPARATION**

#### **G1010 Site Clearing**

- Tree & shrub vegetation clearing and grubbing removal as required accommodating new construction shown on Drawings.

#### **G1020 Site Elements Demolition**

- Protection of Existing Improvements: Provide protection necessary to prevent damage to existing buildings, paving, services and all other improvements indicated to remain in place. Restore improvements damaged during construction to their original condition, as acceptable to the parties having jurisdiction.
- Sawcutting and removing asphalt paving and concrete pavement, removal, demolition and salvage of site improvements as required to accommodate new construction shown on Drawings.
- Salvageable Improvements: Carefully remove items indicated to be salvaged and returned to the Owner or reused, and store at the site for future use. Protect such items from accidental damage, vandalism and theft.
- Protection of existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, damaging heat from paving equipment, excess foot or vehicular traffic, or parking of vehicles within drip line. Tree protection along the edge of clearing and saved trees. Fencing to be 6' galvanized chain link or approved substitute.
- Water trees and other vegetation to remain within limits of contract work as required maintaining their health during the course of construction operations.
- Pruning existing trees where required by licensed Arborist.

### **OUTLINE SPECIFICATIONS**

### **PREFERRED SCHEMATIC REPORT**

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- Repair or replace trees and vegetation indicated to remain that are damaged by construction operations as determined by a licensed arborist.
- Topsoil stockpiling (annual seed for stabilization).

### **G20 SITE IMPROVEMENTS**

#### **G2010 Roadways**

- Vertical Granite Curb (VGC): type VA-4, light gray color, free from seams and other structural imperfections, min. length shall be 6' unless otherwise specified on plan.
- Radial Curb: Type VA4 shall be used on all curves with a radius of 100' or less, where vertical granite curb is indicated.
- Vertical to Flush Transition Curb: Furnish vertical to flush transition curbs of same material as adjacent curb where shown on the drawings, to taper the reveal of the reveal of the curb from 6 inches to 0 inches. Transition curb along a curve shall be of the same radius. The curb shall be manufactured for the purpose intended at the plant and shall not be field cut.
- Sloped Granite Edge (SGE): Sloped granite edging, Type SB as described in Section M9.04.2 of the MassDOT SSHB. Where shown on plan.
- Bituminous Concrete Curbing – Berms shall consist of Class I Bituminous Concrete, Type I-1, Top Course conforming with the Job-Mix Formula given in Section M, paragraph M3.11.03, SSHB and in accordance with the details of design as shown on the Drawings.
- Driveways: Paved driveways shall be of Bituminous Concrete conforming to MassDOT Specifications for 12-inches Gravel Borrow for Aggregate Base, 2 ½ -inches Bituminous Concrete Binder, and 1 ½-inches Bituminous Concrete Top Course.
- Pavement Markings: Marking paint for crosswalks and lane markings shall be fast drying white traffic paint and fast drying yellow traffic paint as specified in MassDOT Standard Specifications under Sections M7.01.10, and M7.01.11, respectively. Work under this item shall be in conformance with Section 860 of the Standard Specifications and the

#### **OUTLINE SPECIFICATIONS**

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Manual on Uniform Traffic Control Devices. Paint shall be applied with mechanical equipment to produce uniform straight edges, in two coats, at manufacturer's recommended rates.

### G2020 Parking Lots

- Vertical Granite Curb (VGC): type VA-4, light gray color, free from seams and other structural imperfections, min. length shall be 6' unless otherwise specified on plan.
- Radial Curb: Type VA4 shall be used on all curves with a radius of 100' or less, where vertical granite curb is indicated.
- Vertical to Flush Transition Curb: Furnish vertical to flush transition curbs of same material as adjacent curb where shown on the drawings, to taper the reveal of the reveal of the curb from 6 inches to 0 inches. Transition curb along a curve shall be of the same radius. The curb shall be manufactured for the purpose intended at the plant and shall not be field cut.
- Sloped Granite Edge (SGE): Sloped granite edging, Type SB as described in Section M9.04.2 of the MassDOT SSHB. Where shown on plan.
- Bituminous Concrete Curbing – Berms shall consist of Class I Bituminous Concrete, Type I-1, Top Course conforming with the Job-Mix Formula given in Section M, paragraph M3.11.03, SSHB and in accordance with the details of design as shown on the Drawings.
- Bituminous Concrete Paving: 12 inch compacted gravel borrow, min. 2-1/2 inch binder course, 1-1/2 inch top course type i-1
- Pavement Markings: Reflectorized traffic paint. 2 component epoxy adhesive at non-pedestrian areas. Acrylic traffic paint at handicapped markings and drop off zones.
- Concrete Vehicular Paving: medium broom finish 6" depth w/ reinforced welded wire mesh, 12" compacted gravel borrow, type B.
- Regulatory Parking Signs, reflectorized aluminum, galvanized steel sq. post.

OUTLINE SPECIFICATIONS

PREFERRED SCHEMATIC REPORT

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## **SOUTH SHORE VOCATIONAL TECHNICAL HS**

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### **G2030 Pedestrian Plazas and Walkways**

- Bituminous Concrete Pedestrian Paving: 8" compacted gravel borrow, min. 1 1/2" binder course, 1" top course type i-1.
- Concrete Pedestrian Paving: medium broom finish 4" depth w/ reinforced welded wire mesh 8" compacted gravel borrow. Sawn expansion joints maximum 30' O.C., control joints maximum 10' O.C. Integrally colored concrete admixture shall be incorporated in the concrete mix where indicated with sandblasted feature bands.
- Sawn Score Joints at all concrete
- Accessible Curb Ramps: Wheelchair Ramps shall be provided at all pedestrian crossings in compliance with the Americans with Disabilities Act (ADA). Ramps and landings shall be 4-inch concrete, air-entrained, 4,000 psi at 28 days. Ramps and landings shall be a minimum of 4-feet and transition slopes shall be a maximum of 12:1 and include ADA compliant detectable warnings with truncated domes.
- Reinforced concrete stairs and ramps with associated fabricated metal handrails and guardrails conforming to MAAB/ ADA regulations. Provide full-depth, precast concrete stair treads where shown on plans. Galvanized handrails for exterior stairs and ramps shall be specified under Misc. Metals.
- Stone Dust Paving: on 12" compacted gravel borrow. Min 2" thick compacted stone dust. Stabilizer additive.
- Precast concrete pavers for pedestrian plazas: 12"x24" Prest Pavers with standard colors and finishes by Hanover ([hanoverpavers.com](http://hanoverpavers.com)), installed on a sand setting bed and aggregate base, with flush granite curb edging.

### **G2050 Athletic, Recreational, and Playfield Areas**

#### **Baseball**

- Baseball Field: Skinned infield consisting of 4" depth engineered infield mix (Basis of design DuraEdge Classic), a blend of 72% Sand; 12% Silt; 16% Clay. Pitchers mound and batters boxes shall include reinforced mound clay.
- Backstops: :40' Height Ultracross Dyneema tension netting system with integral 36" height backstop padding system. Steel tube posts, Delegated design concrete footings.

OUTLINE SPECIFICATIONS

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## **SOUTH SHORE VOCATIONAL TECHNICAL HS**

HANOVER, MA

- Bleachers: Galvanized angle frame structure with extruded aluminum seating, risers and decking. 50 person capacity ea. Chainlink perimeter guard. Wheelchair accessible seating in conformance with MAAB & ADA. Securely erected and surface-mounted to reinforced concrete pad. Basis of design GT Grandstands.
- Dugouts at Baseball: - Pre-engineered, overhead canopy shade structure, sloped metal roof, metal posts, structure frame to be powder coated in custom color. Shade structure to be attached to a thickened structural concrete slab team benches shall be aluminum-with backs. Basis of design Sportsfield Specialties.
- Scoreboards: - Electronic LED scoreboards remote control. Console controller. 5 yr warranty. Basis of design Daktronics. (2) total, at baseball and football field.
- Foul poles – 4" dia. powder coated steel 15' ht with mesh wing. Basis of design Sportsfield Specialties.
- NFHS compliant breakaway bases, pitching and home plate.
- Batting Tunnel: Steel structural support posts with high tension wire and netting system. Stone dust surfacing on 8" gravel base with 6"x6" recycled plastic edging. Basis of design Sportsfield Specialties BTTBS
- Sports netting: 30' height as indicated on plan, 1-3/4" Square Mesh, 1.2mm 4-Strand Braided, Ultra Cross Knotless Dyneema® netting with black vinyl steel posts supports and stainless cable tension system, distributed by Sportsfield Specialties. Stamped engineered submittal.

### **Softball**

- Softball: Skinned infield consisting of 4" depth engineered infield mix (Basis of design DuraEdge Classic), a blend of 72% Sand; 12% Silt; 16% Clay. Pitchers mound and batters boxes shall include reinforced mound clay. Natural grass and irrigated.
- Backstops: 30' Height Ultracross Dyneema tension netting system with integral 36" height backstop padding system. Steel tube posts, Delegated design concrete footings.
- Bleachers. Aluminum plank seating, risers and decking. 80 person capacity. Chainlink perimeter fence guard. Wheelchair accessible seating in conformance with MAAB & ADA. Securely erected and surface-mounted to reinforced concrete pad. Basis of design alumastand by Dant Clayton.
- Dugouts Shelters at Varsity Softball: Pre-engineered, , overhead canopy shade structure, sloped metal roof, metal posts, structure frame to be

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powder coated in custom color. Shade structure to be attached to a thickened structural concrete slab team benches shall be aluminum, with backs. Basis of Design Sportsfield Specialties.

- Foul poles – 4" dia. powder coated steel 15' ht with mesh wing. Basis of design Sportsfield Specialties contact Matt Moyse 607-437-6622 [mmoyse@sportsfield.com](mailto:mmoyse@sportsfield.com)
- Scoreboard: Reuse existing to remain
- Sports netting: 20' – 40' height as indicated on plan, 1-3/4" Square Mesh, 1.2mm 4-Strand Braided, Ultra Cross Knotless Dyneema® netting with black vinyl steel posts supports and stainless cable tension system, distributed by Sportsfield Specialties. Stamped engineered submittal. Integrated with chain link fencing and concrete mow strip where indicated on drawings

### **Football Main Field**

- Bleachers – refer to home bleacher section
- Scoreboard: One multipurpose scoreboard for the football/soccer/lacrosse. Electronic LED scoreboards remote control. Console controller. 5 yr warranty. Basis of design Daktronics.
- Football Goal Posts: MIAA 8' Gooseneck football goal posts (pair) with baseplate and anchor bolts. Qty 2
- Sportsnetting : None at main football field.

### **Track and Field – 400m 6 lanes with 8 lane straightaway**

- Perimeter trench drain ACO-4000 or equal. Shall be installed entire inner radius of track.
- Track surfacing. 4" asphalt with Pulverized and blended base material Paved in place 1/2" permeable urethane track surfacing. Polyurethane binder base with SBR rubber granules, multi sprayed pigmented polyurethane EPDM granules, colored structural spray finish surfacing. (color red, blue or black Certified installer and striper. Basis of design Beynon BSS 100
- Shot put concrete pad, toe board and lawn throwing sector
- Discus concrete pad, ring, cage and net. NFHS compliant. Basis of design Sportsfield Specialties
- Long & Triple Jump aluminum pit system with integrated sand catchers and heavy vinyl pit covers.

### **Home Bleacher/ Pressbox/Wheel Chair Lift**

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- Modular press box 10x24 with galvanized steel flooring, galvanized steel stud wall units with exterior architectural metal panel system, steel joists with aluminum soffit panels, EPDM rubber membrane roof, tempered glass with vinyl frame windows. Heating/cooling. PA System ready. Basis of design Dant Clayton
- Bleachers/Grandstands: 600 seat home bleacher, AISC certified steel fabrication, powder coated steel I-beam understructure, fully closed aluminum welded deck system, enhanced slip resistant deck finish, powder coated aluminum risers, ADA compliant seating.

### Synthetic Turf

- Infilled Synthetic Turf Sports Field – Organic infill (basis of design Brockfill), rounded silica sand. 2" polyethylene slit film / monofilament dual fiber, permeable backing with dimensional stability layer. Shock pad basis of design Brock SP17 or equal. Perimeter reinforced cast in place concrete turf edger with. 8" thick open graded base stone layer with top stone choker course. Herring bone flat drain system at 20' O.C. with 12" perf. CPP perimeter collector drains. Filter fabric over entire subgrade. Tufted/inlaid field markings.
- Soccer Goals: NCAA regulation portable goals with net. Tip resistant in accordance with ASTM F2673-08. Qty 6
- Football Goal Posts: MIAA 8' Gooseneck football goal posts (pair) with baseplate and anchor bolts. Qty 2
- Sports netting: 20' – 40' height as indicated on plan, 1-3/4" Square Mesh, 1.2mm 4-Strand Braided, Ultra Cross Knotless Dyneema® netting with black vinyl steel posts supports and stainless cable tension system, distributed by Sportsfield Specialties. Stamped engineered submittal. Integrated with chain link fencing and concrete mow strip where indicated on drawings

## G2060 Site Development

### Site Furnishings

- Basis of Design for most site furnishings listed below is Landscape Forms ([www.landscapeforms.com](http://www.landscapeforms.com)). All furnishings are surface mounted. Please contact rep Nadene Worth ([nadenew@landscapeforms.com](mailto:nadenew@landscapeforms.com)) for accurate quote

#### A. Wall Mount Wood Benches

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## SOUTH SHORE VOCATIONAL TECHNICAL HS

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- a. Basis of Design is Wall Mounted Straight Link Bench (**Qty 14**)
- b. The straight inline bench shall have following dimensions (23.5" W x 87.5")
- c. The slats shall run from left to right
- B. Metal Café Table/Chairs
  - a. Parc Centre Square Table (28" x 30") with umbrella opening (**Qty 11**)
  - b. Parc Center Armed Chair (**Qty 44**)
- C. Bistro Table/Chairs
  - a. Model "**Bravo Bistro Table**"
    - i. (27" x 27" x 28") – **Quantity 13**
    - ii. Standard Color: Carbon
  - b. Model "**Bravo Bistro Chair**"
    - i. Armless (17.25" x 16" x 32.5") – **Quantity 26**
    - ii. Standard Color: Cadmium
- D. Bike Racks
  - a. Model "**Flo Bike Rack**" (**Quantity 3**) with following specifications
    - i. Dimensions (1.5" x 25" x 27")
    - ii. All standard powder coat color
- E. Trash Receptacles
  - a. Model "**Parc Vue Litter**" (**Quantity Six**) with following specifications
    - i. Top opening (23" x 36"); 30 Gallons
    - ii. All standard powder coat color

### Misc. Site Improvements

- Flagpole: 50' high fiberglass flagpole with internal halyard. Qty. (2) Flush LED uplighting.
- Concrete filled steel bollards with welded cap reflective bands at service area specified under misc. metals.
- Concrete filled Steel bollard at service areas: schedule 40 steel pipes, hot-dipped galvanized, concrete filled, welded steel cap, painted black, with 2 inch wide reflective adhesive bands at service areas.
- Electronic vehicle access gates: The vehicle access control gates shall be an electronic bar arm gate with a 90° vertical raising motion. Entry gate shall be controlled by code and/or access card mounted on separate bollard, refer to Security Section for controls. Gate housing shall be heavy duty steel with powder coated finish. Bar arm shall be aluminum with length of 12'. Bar shall raise within 2 seconds of activation. Ground loop activation shall be installed for free-exiting of parking lot. The basis of design shall be Model 1601 as provided by DoorKing 800-826-7493 [www.doorking.com](http://www.doorking.com);
- Segmental Retaining Walls: 5000 PSI block gravity wall units with architecture finish on face and end Includes caps, drainage stone. Fence post anchoring system above wall where required. Basis of design: RediRock
- Chain link Fence & Gates: Schedule 40 galvanized pipe, hot dipped per ASTM standards, black vinyl coated, thermally fused. Installed in concrete footings and continuous concrete mow strip. Integrated with sports netting where indicated on drawings.

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## SOUTH SHORE VOCATIONAL TECHNICAL HS

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- Entry Sign –entry sign masonry/concrete/metal with LED message board Qty 1.
- Steel Handrails at exterior stairs shall be galvanized after fabrication and painted
- Steel roadway guardrail - MassDOT galv.single rail with wood posts/offset blocks Matching existing rail.

### G2090 Landscaping and Soil Amendments

- Topsoil at planting and general lawn areas: fertile, friable, natural, loam, amend existing topsoil to meet organic and ph requirements. 6 inch depth min. at lawns and seeded areas. 12 inch depth at planting areas.
- Topsoil at sports fields shall be sand-amended topsoil with minimum 80% sand. Coarse to medium sand shall be 60% or greater. Silts and Clays less than 10%. 8" depth. Minimum 6 inches per hour hydraulic conductivity.
- Underdrainage at natural grass sports fields shall include 6" flat panel drains, laid on subgrade at 20' O.C in a herring bone pattern.and include a Sand drain layer underlayer 80/20 2mm sand. 8" dep
- Bioretention soil media within bioretention. Apply biofilter soil media from a qualified vendor in 12" lifts to the desired elevation of the bioretention.
- General Seeded Lawns: Premium quality 50-30-20 Kentucky Blue Grass/Fescue/Perennial Rye. Maintenance period 90 days after germination includes fertilizer, mowing, watering, weed killer, aeration, reseeding.
- Sodded Lawn at Sports Fields: Premium quality Kentucky Bluegrass blend with sand amended native soil root zone. Maintenance period: Minimum 60 days after approved installation includes fertilizer, mowing, watering, pest control, aeration.
- Conservation Seed mix to contain a mix of wildflowers and grasses (Short Prairie for Dry Soils by Prairie Nursery or approved equal). Maintenance period 90 days after germination includes fertilizer, watering, weed killer, aeration, reseeding.
- Erosion Control Mats on all slopes 3:1 or greater.
- Deciduous Trees: Standard nursery stock, 1 year warranty. Tree guying, tree water bags.
- Evergreen Trees: Standard nursery stock, 1 year warranty. Tree guying, tree water bags.
- Deciduous & Evergreen Shrubs: Standard nursery stock, 1 year warranty
- Ground Cover: Standard nursery stock, container grown, 1 year warranty
- Irrigation – At natural turf sports field **except practice fields**. Provide full coverage utilizing commercial grade equipment and heads such as Hunter I25-06-SS or equal. Provide controller with weather proof enclosure and remote, rain sensor, moisture meters and ET

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weather-based controller. Rotor spray heads only, PVC mainline and laterals. Domestic water source.

### G40 ELECTRICAL SITE IMPROVEMENTS

#### G4050 Site Lighting

- Sports Lighting: Only electrical conduit shall be provided for future sports lighting.
- Roadway Lighting: LED pole-top luminaire Mounting height 25 feet.
- Pedestrian Lighting: 14' pole, 16' mounting height of fixture.
- Flagpole uplighting – flush in-ground mounted. LED. 2 per flagpole.
- Scoreboards: **To be provided by owner** - Electronic LED scoreboards remote control. Console controller. 5 yr warranty. Basis of design Daktronics. 3 scoreboards total. (see sports section)
- Electronic Message Board – see entry sign

END OF DOCUMENT

OUTLINE SPECIFICATIONS  
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## OUTLINE SPECIFICATIONS

### PROCUREMENT AND CONTRACTING GROUP

- 00 01 10.1     Cover Page
- 00 00 10       TABLE OF CONTENTS
- 00 00 20       LIST OF DRAWINGS (Not included in this  
                  issue)

### DIVISION 00 - BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT

- 00 01 10.2           Table of Contents**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 11 13             Advertisement for Bids / Invitation to Bid**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 21 13             General Instructions to Bidders**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 31 13.1          Schedule - The Last Planner System**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 31 13.2          Milestone Project Schedule**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 45 13             Qualification / Prequalification of Bidders**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 52 26             Sample Contract for Trade Contractor**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90             Project Start-up / Billing Instructions**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.1          Material Status Report**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.2          Contractor's Sworn Statement**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.3          Sub-Sub Waiver of Lien – Interim**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.4          Supplier's Waiver of Lien – Interim**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.5          Small and Minority Business Enterprise Participation Affidavit**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.6          Bill of Sale of Personal Property**  
*Issued by CMr; refer to Project Manual issued by CMr*



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- 00 62 90.7**      **Schedule “A” Bill of Sale**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 62 90.8**      **Textura Instructions & Fee Schedule**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 72 26**      **General Conditions for Trade Contractor Agreements**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 73 19**      **Project Safety Plan dated**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 73 46**      **Prevailing Wage Rates**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 80 01**      **Quality Plan**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 85 00**      **Building Information Modeling**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 93 16**      **Scope of Work Clarifications**  
*Issued by CMr; refer to Project Manual issued by CMr*
- 00 94 00**      **Site Utilization Plans**  
*Issued by CMr; refer to Project Manual issued by CMr*

**DIVISION 1 – GENERAL REQUIREMENTS**

- 01 11 00**      **SUMMARY OF WORK**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 14 00**      **WORK RESTRICTIONS**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 21 00**      **ALLOWANCES**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 22 00**      **UNIT PRICES**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 25 00**      **CONTRACT MODIFICATION PROCEDURES**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 29 00**      **PAYMENT PROCEDURES**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 31 00**      **PROJECT MANAGEMENT PROCEDURES –**  
Issued by CMr; refer to Project Manual issued by CMr
- 01 32 00**      **CONSTRUCTION PROGRESS DOCUMENTATION:**  
(In collaboration with CMr)

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Requirements of procedures to follow to document the progress of construction; relates to payments requested by Contractor.

- 01 33 00 SUBMITTAL PROCEDURES**  
(In collaboration with CMr) Requirements and responsibilities of Contractor and Architect in submitting and reviewing informational and action submittals.
- 01 45 00 QUALITY CONTROL**  
(In collaboration with CMr) Requirements for quality assurance and quality control including special inspections
- 01 42 20 REFERENCES**  
Codes and standards applicable to the Project and definitions used in the Contract Documents.
- 01 41 04 STRUCTURAL TESTS AND SPECIAL INSPECTIONS**  
Requirements pertaining to Code mandated special inspections for foundations, concrete structure, steel structure, cold formed metal framing systems, masonry, spray applied fire resistive materials, special inspection of architectural components including access floors, exterior cladding and veneer, and interior and exterior nonbearing walls, fire resistive joint systems and through penetration fire stops, and MEP systems and components.
- 01 41 04.01 STATEMENT OF SPECIAL INSPECTIONS (STRUCTURAL)**  
Executed by design professional and stating which special inspections are to be performed including but not limited to foundations, masonry, and structural steel.
- 01 45 29 TESTING LABORATORY PROCEDURES:**  
Requirements pertaining to protocols regarding materials testing and reporting to be coordinated between CMr and OPM site representative.
- 01 50 00 TEMPORARY FACILITIES AND CONTROLS**  
(In collaboration with CMr) Requirements for temporary utilities, support facilities and security and protection facilities.
- 01 60 00 PRODUCT REQUIREMENTS**  
Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- 01 60 01 SUBSTITUTION REQUEST FORM**
- 01 70 00 EXECUTION REQUIREMENTS**  
Requirements governing execution of the Work including construction layout, field engineering, installation of products and materials, coordination with Owner installed products, progress cleaning, starting and adjusting, protection of installed construction and correction of the Work.
- 01 73 29 CUTTING AND PATCHING**

Remove existing construction to permit performance of other Work and perform repair work to restore surface to pre-existing condition during the course of construction. Perform cutting using methods least likely to damage retained elements adjoining construction, and patching, using materials identical to existing materials, such that building systems capacity to perform is not impaired, that load carrying capabilities are not impaired, maintenance is not increased, that operational life or safety is not decreased and such that no sign of cutting and patching is visible and building's aesthetic qualities are not reduced.

**01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL**

Procedures to be followed in management and disposal of construction waste; includes recycling and salvage.

**01 77 00 CLOSEOUT PROCEDURES**

Administrative and procedural requirements for contract closeout at time of Substantial and Final Completion, including project record drawings, specifications and product data, operation and maintenance manuals, general commissioning procedures, demonstration of equipment and training of Owner's personnel in operations and maintenance of equipment and systems, final inspection procedures, warranties, final cleaning and requirements for final payment.

**01 81 13.13 LEED REQUIREMENTS**

General requirements and procedures for compliance LEED Scorecard

**01 81 13.26 LEED SCORECARD**

**01 91 13 GENERAL COMMISSIONING REQUIREMENTS**

Detailed requirements for commissioning building systems; sets administrative requirements for commissioning of specific systems

<b>DIVISION 02 – EXISTING CONDITIONS</b>
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**02 32 19  
TEST PITS**

Provide equipment and survey for exploratory test pits required at construction.

**02 41 13  
SELECTIVE SITE DEMOLITION**

Demolish and dispose of existing site improvements such as pavements, curbs, walks, fences, gates, bollards, signage, playground and game equipment. Asphalt pavements may be milled and stockpiled for re-use provided it meets testing requirements. Demolish and dispose of site utilities

(water, sanitary sewer, gas, electric, data, telephone) piping or cables and related structures designated for removal.

**02 41 00  
DEMOLITION**



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Demolition and removal of buildings and structures and as required for new work. Refer to the Drawings for additional requirements. Demolition and removal of selected site elements and as required for new work. Refer to the Drawings for additional requirements. Salvage of existing items to be reused or turned over to the facility. Removal and legal disposal of demolished materials off site. Except those items specifically designated to be relocated, reused, or turned over to the facility, all existing removed materials, items, trash and debris shall become property of the Contractor and shall be completely removed from the site and legally disposed of at her/his expense. Salvage value belongs to the Contractor. On-site sale of materials is not permitted. Scheduling and sequencing operations without interruption to utilities serving occupied areas. If interruption is required, obtain written permission from the utility company and the Owner. Provide temporary services as necessary to serve occupied and usable facilities when permanent utilities must be interrupted, or schedule interruption when the least amount of inconvenience will result.

**DIVISION 03 – CONCRETE**

Included in Structural Outline Specifications

**DIVISION 4 – MASONRY**

**04 20 00  
UNIT MASONRY ASSEMBLIES**

Concrete masonry units at exterior locations: ASTM C90, monumental size, normal weight, split and ground face units as shown by Drawings with integral water repellent; concrete masonry units at interior locations: ASTM C90 standard size, smooth face, normal weight units; concrete brick; sound absorbing masonry units: The Proudfoot Company: Soundblox; Modular face brick, ASTM C216, Grade SW, Type FBS, common brick, mortar and grout; hot dip galvanized reinforcing steel, masonry joint reinforcement, ties and anchors; flashing embedded in masonry (stainless steel sheet with formed drip edges); cavity wall insulation: extruded polystyrene rigid board insulation, thickness shown by Drawings; cavity wall construction with veneer of concrete masonry units and face brick and backup construction of concrete masonry units or cold-formed metal framing at locations shown; installation of cast stone trim units furnished under Division 4 Section "Cast Stone," installation of natural limestone units furnished under Division 4 Section "Indiana Limestone Trim Units;" precast concrete lintels with thin brick faces, installation of steel lintels furnished under Division 5 Section "Metal Fabrications," and masonry accessories including compressible neoprene or urethane filler materials, weep vents (Weep Vent as manufactured by Mortar Net USA) and cavity drainage material (Mortar Net as manufactured by Mortar Net USA). Comply with requirements for 10 percent of materials extracted, processed and manufactured regionally to conform to Requirements for Connecticut High Performance Buildings as follows: Regional Materials content.

**04 72 00  
CAST STONE**

Architectural precast concrete building units intended to simulate natural cut stone including items such as window sills, lintels, cornices, water tables, column covers and medallions as manufactured by Architectural Cast Stone, Inc., Continental Cast Stone Manufacturing, Inc., or DuraStone.

**DIVISION 5 – METALS**

**05 12 00  
STRUCTURAL STEEL**

Included in Structural Outline Specifications.

**05 20 00  
STEEL JOISTS:**

Included in Structural Outline Specifications.

**05 30 00  
METAL DECKING:**

Included in Structural Outline Specifications.

**SECTION 05 40 00  
COLD FORMED METAL FRAMING**

Design, engineer, furnish and install cold formed metal framing (also referred to as "LGMF" on Drawings) for the following applications: Load bearing formed steel stud exterior wall framing including all connections, bracing, bridging, support, and accessories. Engineering: Provide the services of a Professional Engineer, registered in the State of Connecticut to design engineer, and certify that the work of this section meets or exceeds the performance requirements specified in this section and as required by Connecticut State Building Code. Structural performance: Design, engineer and provide a complete metal framing and support system having deflection limits as specified herein under the full inward and outward lateral load prescribed by applicable codes for this project location. Deflection and structural calculations shall not include any structural benefit from the veneer or curtain wall system; metal framing alone shall carry the loads. Where a member supports more than one finish, the most restrictive deflection shall govern. Manufacturers offering products which may be incorporated in the work include, but are not limited to, the following: Dietrich Industries, Inc., Pittsburgh PA., Gold Bond Building Products/National Gypsum Company, Charlotte NC. Marino Industries Corp., South Plainfield NJ. Unimast Incorporated, Franklin Park IL. Materials: All galvanized studs, 12, 14, and 16 gage shall be formed from steel that corresponds to the requirements of ASTM A 446, Grade D, with a minimum yield of 50,000 psi. All 18 and 20 gage studs and all track, bridging end closures and accessories shall be formed from steel that corresponds to the requirements of ASTM A446 Grade A, with a minimum yield of 33,000 psi.

**SECTION 05 50 00  
METAL FABRICATIONS**

Furnish and install: Steel stairs with intermediate landing construction (where not provided by structural steel trade), complete with all supporting members and railings. Interior and exterior handrail and guardrail assemblies. All steel to be stainless steel.

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Seismic restraining angles at top of masonry walls. □ Roof and Pit Ladders and related work, where indicated on the Drawings. □ Elevator Sill Support Angles □ Framing angles (vertical and horizontal) to laterally support metal stud framing at low partitions. □ Extruded Aluminum Stair Nosings at Concrete Stairs. □

Engineering: Provide the services of a Professional Structural Engineer, registered in the State of Connecticut to design and certify that the work of this section meets or exceeds the performance requirements specified in this section and as required by Connecticut State Building Code. All materials shall be new stock, free from defects impairing strength, durability or appearance, and of best commercial quality for each intended purpose. Unless specifically called for otherwise, work shall be fabricated from the following: Steel shapes, plates and bars: ASTM Designation A 36., Steel pipe: ASTM A53, grade A, seamless pipe, black finish unless otherwise noted., Structural steel tubing, square and rectangular shapes; ASTM A500, Grade B., Steel plates to be bent or cold-formed: ASTM A283, grade C., Steel bars and bar-size shapes: ASTM A306, grade 65, or ASTM A36., Cold-finished steel bars: ASTM A108., Cold-rolled carbon steel sheets: ASTM A336., Sandblasted Stainless Steel: Type 304 Metal surfaces, general: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet. Steel materials: to be hot dip-galvanized, provide steel chemically suitable for metal coatings Provide all fasteners and attachments of the same material and finish as the metal to which it is applied unless otherwise noted. Provide all fasteners and attachments as required for work specified herein and as indicated on the Drawings. Welding rods: AWS E70XX grade, or select in accordance with AWS specifications for the metal alloy to be welded and in accordance with the recommendation of the welding rod manufacturer.

<b>DIVISION 6 – WOOD &amp; PLASTICS</b>
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**SECTION 06 10 00**  
**ROUGH CARPENTRY**

Fire retardant treated plywood backer panels for mounting of electrical panel boards, telephone/data backboards, HVAC and fire control equipment and other equipment. Curb framing and related blocking for rear and sides of metal lockers. Wood nailer inserts at concrete base for anchoring metal lockers. Various in-wall and above-ceiling wood blockings and nailers for anchoring and supporting various fixtures, equipment or devices specified elsewhere requiring blocking and nailers. Rough installation hardware, including bolts, screws, spikes, nails, clips, and connection assemblies, as needed for installation of the rough carpentry work. Pressure treated wood blocking as required for installation of all rooftop prefabricated equipment curbs, windows, storefronts, curtain walls, and skylights. Pressure treated wood blocking built-up for roof edge and trim installation. Provide wood blocking in wall at all marker board/ tackboard locations and at all toilet accessories.

Install the following furnished under the designated Sections: Behind wall, above ceiling, below floor, and other concealed anchorage devices for handicap handrails in toilet rooms: Section 10 28 13 - TOILET ACCESSORIES. Above ceiling anchorage devices to support curtain track: Section 10 21 23 – CUBICLE AND WALK-DRAW CURTAINS.

Lumber for blocking, nailers and curbs as indicated or required: Hem-Fir, Douglas Fir, Eastern Spruce, Eastern Hemlock, or Southern Pine, surfaced dried stud or utility grade.



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Wood members shall be of sizes indicated on the Drawings or of the same size as the members being braced.

Plywood and sheet products for unspecified exterior concealed from view locations, soffits, roof curbing, and underlayment for fascia and roofing (also referred to as "P. T. Plywood" on Drawings): EWA RATED SHEATHING, of indicated thickness(es). For electric panel board mountings and similar uses: EWA graded B-D INT, Group 2 species, touch-sanded, fire-retardant treated, 3/4 inch thick, except as otherwise indicated on the Drawings. For unspecified interior concealed from view locations: EWA graded C-D PLUGGED INT, Group 2 species, thickness as indicated on the Drawings.

Wood Treatment - Treated wood products shall be produced by a single treatment plant, fully licensed by the chemical manufacturers, and conforming to the requirements specified herein.

Kiln dry all treated lumber and plywood to the following maximum moisture content after treatment. Lumber: 19 percent. Plywood 15 percent.

Fire Retardant Treated Wood. Chemical Manufacturer: Subject to compliance with the requirements specified herein, Products which may be incorporated in the work include: Hickson Corporation, product, "Dricon". Hoover Treated Wood Products, Inc., product "PyroGuard".

Pressure Preservative Treated Wood. Chemical Manufacturer: Subject to compliance with the requirements specified herein, Licensed products which may be incorporated in the work include: Chemical Specialties, Inc., product "SupraTimber". Hickson Corporation, product, "Wolmanized Pressure Treated Wood". Hoover Treated Wood Products, Inc., product "CCA Outside Wood". Treatment: Chromated Copper Arsenate (CCA) Type C in accordance with AWWA Standard P5, free of sodium and sulphates. Registered by the United States Environmental Protection Agency as a pesticide containing inorganic arsenic.

## **06 20 00**

### **FINISH CARPENTRY**

Furnish and install: Hardwood Nosing at Window Sills, Particle Board Window Sills with Plastic Laminate, MDF Paneling with Hardwood Veneer, Wood cubbies. Wood Benches including seat, nosing, aprons, fascia, etc. including all related work and hardware. Other finish carpentry work where as indicated on Drawings. No attempt is made in this Section to list all elements of finish carpentry required on this project or to describe how each element will be installed. It is the responsibility of the Contractor to determine for itself the scope and nature of the work required for a complete installation from the information provided herein or on the Drawings.

Quality Standards: All materials and workmanship scheduled to receive transparent finishes shall meet AWI Premium grade quality standards. All other materials and workmanship shall meet AWI Custom grade quality standards.

Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by the American Lumber Standards' Committee Board of Review.

Softwood Plywood: DOC PS 1. Hardwood Plywood: HPVA HP-1, made with adhesive containing no urea-formaldehyde resin. Use White Maple veneer plywood for all exposed

to-view construction with clear finish unless otherwise noted on Drawings.

Hardboard: AHA A135.4. Medium-Density Fiberboard: ANSI A208.2, Grade MDF.

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Particleboard: ANSI A208.1, Grade M-2.

Interior trim to receive paint (opaque finish): Typical: Clear straight-grained poplar, C-Select or better. At locations which at least 7 feet above finished floor: Clear straight-grained Poplar, Sugar Pine, Ponderosa Pine, or Idaho White Pine, C-Select or better. Interior trim furnished under this Section, scheduled to receive transparent finish: Select White Maple (*Acer saccharum*), Plain Sawn AWI Premium Grade (as installed). Shelving to receive paint: 3/4 inch thick Birch veneer plywood (AA) with 3/8 inch hardwood edge banding at all edges. MDO plywood shall be 3/4" Medium Density Overlay (MDO), BB, Group 1, APA Trademarked, 48" x 96" cut to fit in design configuration.

Provide other finish carpentry products, not specifically described, but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

Veneered panels for transparent finish: The face veneer for transparent finishes shall be minimum 1/28 inch thick on doors, shelves, panels and other exposed surfaces meeting AWI Premium Grade Standards (installed). Each exposed face shall be of tight smooth veneer with joints parallel to vertical edges with no sharp contrasts. Wood Species: Select White Maple (*Acer saccharum*), Plain Sawn, Grade A. Matching of adjacent pieces of veneer: book matched. Panel face assembly: Balanced. Direction of Grain: Vertical. Matching of Adjacent Panels: Sequence matched uniform size sets.

High Pressure Laminate shall be decorative surface papers, impregnated with melamine resins, bonded under heat and pressure to kraft papers impregnated with phenolic resins.

Standard Decorative Laminate - General Purpose Type, Wilsonart "Type 107", or equal as approved by Architect.

## **06 40 00**

### **ARCHITECTURAL WOODWORK**

Furnish and install the following: Custom Woodwork Items

FURNITURE-GRADE PLYWOOD MATERIALS: Grade B, Russian Baltic Birch Plywood panels, 9 ply per 1/2" panels laminated to provide required thickness as shown on the drawings. Surfaces to be sanded as required to receive a natural clear finish.

Lumber Materials - Concealed supports for edge and corner backing shall be kiln dried birch or poplar, meeting AWI Premium Grade Standards. Blocking and furring at base and walls shall comply with American Softwood Lumber Standard PS 20-70 and with specific grading requirements of SPIB: Kiln dried (KD15), Structural Light Framing, N<sup>o</sup>. 2 grade, free of warping and large knots. Internal concealed framing for casework: Kiln-dried, (KD15), eastern pine, poplar, eastern spruce, or southern pine, conforming to AWI Premium grade.

Plastic Laminate Facing - Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following: Formica Corp., Cincinnati, OH. Nevamar Corp., Odenton MD. Wilsonart, Temple TX. Plastic laminate, general purpose, conforming to NEMA LD3.1 -1991 Grade GP50, nominal 0.050 inch thickness, in a low non-directional texture in color price group selected by the Architect. General purpose grade laminate shall be used for all exposed to view surfaces including Exposed outward face of cabinet fronts and closure trim, Cabinet doors (all sides), Drawer fronts (all sides), Interior surfaces of open cabinets (without doors), Plastic laminated trim.

<b>DIVISION 7 – THERMAL &amp; MOISTURE PROTECTION</b>
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**07 11 00**

**BELOW GRADE DAMPPROOFING**

Furnish and install damp proofing and accessories at below-grade, exterior face of the vertical foundation walls.

Manufacturers - Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal: Marflex Building Solutions, Middletown, OH, The Karnak Corp., Clark, NJ, Tremco Barrier Solutions, Inc., Reynoldsburg, OH, Or equal as approved by Architect.

Basis of Design Product: MoistureBlock 361 Membranes as manufactured by Marflex Building Solutions.

**07 16 00**

**CEMENTITIOUS WATERPROOFING**

Prepare surfaces and repair cracks in substrate scheduled to receive waterproofing. Furnish and install cementitious waterproofing at walls and floor of elevator pit and sump pit.

Specified Manufacturers for Cementitious Waterproofing: Products which may be considered by the Architect, include the following: Five Star Products, Inc., Fairfield CT. product "Five Star Cementitious Waterproofing", Silpro Masonry Systems, Inc., Ayer MA. product "Sealcoat", Thoro System Products, Miami FL, product "Thoroseal", Tremco Inc. Beachwood OH, product "Permaquick Crystalline waterproofing"

Joint filler, and other installation accessories: As recommended by the waterproofing manufacturer. Portland cement plaster to be mixed with waterproofing: As recommended by the waterproofing manufacturer. Water: Clean and fresh without contaminates.

**07 21 00**

**BUILDING INSULATION**

Furnish and install the following: Tongue & groove rigid insulation beneath interior concrete slab on grade, full coverage, and as indicated on Drawings. Tongue & groove rigid insulation at foundation walls from top of footing to 6 inches below finish grade, or from top of footing to underside of slab, whereas indicated on Drawings. Thermal batt insulation between wall framing, where indicated. Sheet polyethylene vapor barrier. Acoustical insulation where indicated. Foamed-in-place insulation / vapor barrier sealant: applied to seal gaps, cracks, cavities and joints in the building envelope, at door frames, perimeter of window frames, and other similar penetrations in exterior walls.

Manufacturers: Rigid insulation board (extruded polystyrene): Amoco Foam Products Company, Atlanta, GA, Dow Chemical Corp., Midland MI, UC Industries (Division of Owens-Corning), Parsippany, NJ.



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Manufacturers: Glass fiber batt/blanket insulation: CertainTeed Corporation, Valley Forge PA, Owens Corning Fiberglas Corp., Toledo OH, Johns Manville Corp., Building Insulation Division, Denver CO, USG Corp./ USG Interiors Inc., Chicago IL.

Manufacturers: Foamed -in-place insulation: BASF Corp., Polymers Div., Styropar Group, Parsippany NJ, Flexible Products Company (Division of Dow Chemical), Marietta GA, Universal Protective Coatings, San Rafael CA.

Manufacturers: Acoustical mineral fiber insulation: Fibrex Inc., Alexandria, IN, Rock Wool Manufacturing Company, Leeds, AL, USG Corp./ USG Interiors Inc., Chicago IL.

Manufacturers: Sprayed cellulose thermal insulation: International Cellulose Corporation, Houston, TX. MATERIALS

Rigid insulation board (extruded polystyrene): shall be closed cell rigid extruded polystyrene foam board insulation of thickness(es) as indicated with tongue and groove edge, self-extinguishing, conforming to ASTM C 578-87a, Type IV, with a compressive strength of 25 pounds per square inch when tested in accordance with ASTM D 1621 Veneer Cavity Insulation: Closed cell rigid extruded polystyrene foam board insulation, ship lapped edge, self-extinguishing, conforming to ASTM C 578-87a, Type IV, with a compressive strength of 25 pounds per square inch when tested in accordance with ASTM D 1621 equal to Dow Chemical Corp., Styrofoam Brand "Cavity Mate Ultra" insulation.

Thermal batt/blanket glass fiber insulation conforming to ASTM C-665 Type I, un-faced, nominal 5-1/2 inch with R-21 thermal rating and nominal 9-1/4 inch with R-30 thermal rating. Provide width appropriate for spacing of framing or furring members with which used. Acoustical batt insulation: Unfaced glass fiber insulation nominal 1 inch, 2 inches, 3-1/2 inches, and 5 inches thick as indicated on the Drawings conforming to ASTM C-665 Type I, Class C (non-thermal), of width appropriate for spacing of framing or furring members with which used. Foamed-in-place insulation for vapor barrier sealant: UL Class I, two component polyurethane self frothing foam insulation equal to Flexible Products Company, product "Froth-Pak" having the following characteristics:

**07 25 00**

**FIRE RESISTIVE AIR & VAPOR BARRIER SYSTEM**

Furnish and install air and vapor barrier membrane system located in new wall cavities Bridge and seal air leakage pathways in walls, roof and foundation junctions, louver and door openings, control and expansion joints, masonry ties, piping and other penetrations through the exterior envelope assembly. For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer. The foregoing Specification is based on Fluid Applied system but the Architect will also accept use of a membrane system (peel-n-stick) if products meet or exceed performance of fluid applied systems and so long as the Contractor complies with all manufacturers specifications for the membrane AVB.

Fluid applied membranes shall be a single component or two part, self-curing material designed, manufactured and tested in accordance with the most current requirements as an air barrier membrane. The Basis of Design and the requirements and performance data listed hereunder is based on "Procor" as manufactured by Grace Construction Products, Cambridge, MA. Other products having similar performance and considered equivalent are: ExoAir 120 as manufactured by Tremco, Beachwood, OH, Barriseal by Carlisle, or equal, subject to approval by Architect.

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Performance Requirements: Air Leakage @ 75Pa Differential Pressure (ASTM E 2178-01) 0.0006 L/(s.m<sup>2</sup>)/ (0.00012 cfm/ft<sup>2</sup>). Water Vapor Permeance (ASTM E 96, Method BW) Less than 20 ng/Pa.s.m<sup>2</sup> Peel Adhesion to Concrete (ASTM D 903 Modified<sup>1</sup>) 880 N/m (5 lb./in.)

Transition tape shall be 0.9 mm (36 mils) of self-adhesive rubberized asphalt integrally bonded to .1 mm (4 mils) of cross-laminated, high-density polyethylene film to provide a min. 1 mm (40 mil) thick membrane. Flexible membrane wall flashing shall be 0.8 mm (32 mils) of self-adhesive rubberized asphalt integrally bonded to 0.2 mm (8 mils) of cross-laminated, high-density polyethylene film to provide a min. 1.0 mm (40 mil) thick membrane. Surface Conditioner: shall be latex-based, water-dispersible liquid for concrete substrate preparation before application of self-adhered membranes and tapes. Termination Mastic: shall be two part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 100 g/l max. VOC Content.

**07 26 19**

**TOPICAL MOISTURE VAPOR MANAGEMENT SYSTEM**

Furnish and install topical moisture vapor management system covering all interior first floor concrete floors prior to installing various finish flooring. The topical moisture vapor management system shall consist of: Single-coat, fast-curing, 100% solids epoxy formulated to suppress excessive moisture vapor emissions. Hydraulic cement-based self-leveling underlayment. Obtain from and coordinate with each finish flooring trade for tolerance and compatibility requirements. Topical moisture vapor management system shall be compatible with flooring adhesive and installation method proposed by each flooring trade to achieve full warranty status by each flooring manufacturer.

Manufacturers offering products which may be incorporated in the work include the following, or equal as approved by Architect: ARDEX Engineered Cements Aliquippa, PA. KOSTER American Corporation, Virginia Beach, VA., Düraamen, Cincinnati, OH., Floor Seal Technology, Inc., Milpitas, CA.

Single-Coat, Fast Curing Epoxy Coating - One-Coat Moisture Control System for concrete to receive hydraulic underlayments. Basis of Design: "ARDEX MC RAPID" as manufactured by ARDEX Engineered Cements, Aliquippa, PA. Hydraulic Cement-Based Self-Leveling Underlayment Basis of Design: "ARDEX V 1200" as manufactured by ARDEX Engineered Cements, Aliquippa, PA.

Provide all pertinent installation accessories from the same manufacturer, including but not limited to: Primer: ARDEX P 82™ Ultra Prime. Repair Compound: ARDEX ARDIFIX™ Two-Part, Low Viscosity Rigid Polyurethane. Joint Sealant: ARDEX ARDISEAL™ RAPID PLUS Fast Setting Semi-Rigid Joint Sealant. Patch: ARDEX MRP™ Moisture Resistant Patch. Other accessories necessitated by the job conditions.

**07 41 50**

**ALUMINUM COMPOSITE METAL PANELS**

Furnish and install the following: Aluminum Composite Metal Panel system including all cold formed attachment/support system, anchorages, joint systems, flashings, and accessories. This section should also include cavity wall rigid insulation in the areas behind the aluminum composite metal panel system.

Manufacturers offering products which may be incorporated in the work include the following, or equal as approved by Architect: LYMO Architectural Panel Systems, Inc.,

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Centria, The Dunmon Corporation, or approved equal by the Architect. Basis of Design: 3000 Vented Rainscreen System as manufactured by LYMO Architectural Panel Systems Inc. The Basis of Design for the attachment/support system is the Cladding Corp Plus5 System. Other manufacturers offering products which may be incorporated in the work include the following: Eurofox, Knight Wall System, GIP façade, or approved equal by the Architect.

**07 54 00**  
**THERMOPLSATIC PVC MEMBRANE ROOFING**

Furnish and install the following: Thermoplastic PVC adhered membrane roofing system with tapered and regular rigid roof insulation boards. Overlayment board (cover board). Flashing at all penetrations through the roofing system and at all materials that abut roofing system. Walkway pads leading from roof access point to each rooftop mechanical unit and at work areas surrounding rooftop units. Protection pads at Photo-Voltaic Panel Supports. Roof expansion joints. Vapor Retarder. Flashing for equipment mounted on roofing and roofing penetrations.

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Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Carlisle Syntec Systems, Carlisle PA., Firestone Building Products Co., GAF Materials Corporation, GenFlex Roofing Systems and Johns Manville. To establish the design basis, quality standards and performance requirements, the following product description is based on "Elevate InvisiWeld" as produced by Firestone Building Products Company, or Equivalent system as produced by other specified manufacturers will be acceptable subject to Architect's approval. Thermoplastic Polyolefin Roofing Membrane (**BASE BID**): Thickness: 60 mils (1.5 mm) nominal. Exposed Face Color: White. Physical Properties: Breaking strength: 225 lbf; ASTM D 751, grab method. Elongation at Break: 15 Percent; ASTM D 751. Tearing strength: 55 lbf minimum; ASTM D751, Procedure B. Water Absorption: Less than 4 percent mass change after 166 hours immersion at 158 deg F; ASTM D471. Provide all adhesives and sealants as required for proper installation. Provide TPO-Clad Metal roof flashings where needed. Insulation to be Polyisocyanurate board insulation: ASTM C

**07 72 00**  
**ROOF ACCESSORIES**

Furnish and install the following: Prefabricated equipment curbing, where not provided under Division 23. Louvered Penthouse Elevator Vents. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Babcock-Davis Hatchways, Inc., Arlington, MA., Bilco Company, New Haven CT., O'Keeffe's Inc., San Francisco, CA., Wasco Products, Inc., Sanford ME. Prefabricated Support Curbs: Provide custom units, fabricated from minimum 14 gage galvanized steel, minimum 3 feet high, sized as necessary To coordinate with elevator vent being supported. Provide units with welded corners and as follows: Curb type: Insulated, double wall, minimum 36 inches high with treated wood nailer at top of entire curb perimeter. Counter-flashing: Provide counter-flashing coordinated with roofing system. Louvered Penthouse Elevator Vent with built in smoke damper: shall be factory-fabricated and prefinished "PEV-400" as manufactured by Greenheck, or equal as approved by the Architect and having the following minimum features:

**07 72 33**  
**ROOF HATCHES**



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Provide factory fabricated and finished roof hatches and accessories. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: The Bilco Company, New Haven, CT., Babcock-Davis; a Cierra Products Inc. Company, Brooklyn Park, MN., J. L. Industries, Inc. Bloomington, MN., O’Keeffe’s, Inc.; San Francisco, CA.

The following product description is based on “Type F” as manufactured by The Bilco Company. Equivalent product as produced by other specified manufacturers will be acceptable subject to Architect’s approval. The roof hatch shall be single leaf, pre-assembled and pre-finished from the manufacturer with sizes no less than 16 sf (48” x 48”) and configurations at locations as indicated on Drawings. Cover shall be reinforced to support a minimum live load of 40 psf with a maximum deflection of 1/150th of the span and no less than 20 psf wind uplift.

**07 72 34**

**ROOF HATCH SAFETY RAILS**

Furnish and install factory fabricated roof hatch rail system and all pertinent accessories as indicated and/or as specified in this Section. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: The BILCO Company, New Haven, CT., Kee Safety, Inc., Buffalo, NY., Garlock Safety Systems, Plymouth, MN. Basis of Design: “Model “RL-F” as manufactured by The BILCO Company, New Haven, CT.

Hatch rail system shall match the size and configuration of the roof hatch. The hatch rail system shall be assembled and installed in accordance with manufacturer’s instructions. Railing System shall consist of a top rail, mid rail, and swinging gate, with the hatch curb acting as the toe plate. Hatch rail system shall attach to the roof hatch curb through metal cap flashing with weather seal and shall not penetrate any roofing material. Railing system shall extend to a height of at least 42” from the finished roof deck. Self-closing gate shall be provided with hatch rail system with **gate lock** automatically latches gate in the closed position. High visibility safety yellow color shall be molded in. UV and corrosion resistant construction with a twenty-five year warranty.

**07 84 00**

**FIRESTOPPING**

Furnish and install fireproof firestopping, firesafing materials, smoke seals and related accessories required for this Project for all penetrations through fire resistance rated construction, including, but not limited to, penetrations for plumbing, fire suppression, heating, ventilating and air conditioning, electrical systems, and specialized equipment. Fire resistance rated construction requiring firestopping includes, but is not limited to: floors, rated walls and partitions, smoke barriers, smoke partitions, partitions in rated corridors, passageways and stairs, shaft partitions, shaft wall (vertical and horizontal), area separation fire walls, party wall systems, and temporary fire resistant rated partitions and barriers. Furnish and install firestopping/smoke seals at construction joints occurring at tops of fire resistance rated partitions, smoke partitions, and temporary partitions between top of partition and underside of deck above. Furnish and install all firestopping, firesafing, and smoke seals at perimeter of floor/roof construction and exterior wall systems, as indicated and where required by applicable codes. Furnish and install all firestopping, firesafing, and smoke seals at expansion joints in chase walls where expansion joints are not exposed to view. Furnish and install all firestopping, firesafing, and smoke seals where required by applicable codes and as additionally required by authorities having jurisdiction at no additional cost to the Owner.

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Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Bio Fireshield, Inc., Concord, MA., Dow Corning Corporation, Midland, MI., 3M Company, Saint Paul, MN., Specified Technologies, Inc., Somerville NJ., Metacaulk, (The Rectorseal Corporation), Houston TX., Tremco, Inc., Cumberland RI.

Firestop mortar: asbestos free, cementitious mortar, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM/UL1479. Silicone Firestop sealant: Single component, non-combustible silicone elastomer firestop sealant, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479. Intumescent firestop sealant and caulks: Acrylic based, water resistant sealant, which will not re-emulsify after drying.

Firestop putty: sticks or pads. Firestop collars: Pre-manufactured fire protective pipe sleeve, UL classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479. Firestop pillows: UL Classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479. Mineral fiber / ceramic wool non-combustible insulation (fire safing): Provide US Gypsum Company product "Thermafiber" having a minimum density of 4 pounds per cubic foot, Fibrex product "FBX Safing Insulation" having a minimum density of 4 pounds per cubic foot, or provide Manville Corporation product "Ceramic Fiber Insulation" having a minimum density of 6 pounds per cubic foot, or approved equal product to suit conditions and complying with firestop manufacturer's requirements. Elastomeric Firestopping: Non halogenated latex based elastomeric coating applied by airless spray, Specified Technologies, Inc., product "Spec Seal Elastomeric Firestop Spray".

**07 90 00**  
**JOINT SEALERS**

Scope to include: Prepare sealant substrate surfaces. Furnish and install sealant and backing.

Joint Sealer Type AA (Acrylic acoustical): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.

Joint Sealer Type AP (Acrylic painters caulk): One component acrylic latex caulking compound, conforming to FS 19-TP-21M and ASTM C 834, paintable within 24 hours after application, with a minimum movement capability of plus minus 12.5 percent,

Joint Sealer Type B (Butyl): Gun-grade modified butyl and polyisobutylene sealant, conforming to FS TT-S-001657, Type I, and ASTM C-834, with a movement capability of  $\pm 10$  percent or better and a Shore A hardness of 24 to 28.

Joint Sealer Type BP2 (Bitumen modified polyurethane, Multi-component): Pouring grade self-leveling bitumen modified two component urethane sealant, conforming to ASTM C920, Type M, Grade P, Class 25 and FS SS-S-00227E, Type 1, Class A, with a minimum movement capability of plus 50/minus 25 percent.

Joint Sealer Type HL1 (Horizontal-self-Leveling, 1-component): Pouring grade self-leveling modified urethane sealant, conforming to FS TT-S-000230C, Type I, Class A, and ASTM C 920 Type S, Grade P, Class 25, with a minimum movement capability of  $\pm 25$  percent,

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Joint Sealer Type HL2 (Horizontal-self-Leveling, 2-component): Pouring grade self-leveling multi-component urethane sealant, conforming to FS TT-S-000227E, Type I, Class A, and ASTM C 920, with a minimum movement capability of plus minus 25 percent.

Joint Sealer Type HT (Horizontal-Trowel): Trowel grade multi-component modified urethane sealant, conforming to FS TT-S-000227E, Type I, Class A, and ASTM C 920, with a minimum movement capability of plus minus 25 percent.

Joint Sealer Type P1 (Polyurethane 1-component): Low modulus single component gun-grade polyurethane sealant, non-sagging, conforming to FS TT-S-000227E, Type II, Class A, and ASTM C 920, Type S, Class 12-1/2, Grade NS, use NT,M, A and O with a minimum movement capability of  $\pm 25$  percent.

Joint Sealer Type P2 (Polyurethane, Multi-component): Low modulus type, Multi-component non-sagging gun-grade polyurethane sealant, conforming to FS TT-S-000227E, Type II, Class A, and ASTM C 920, Type M, Class 25, Grade NS, use NT,M, A and O with a minimum movement capability of  $\pm 50$  percent.

Joint Sealer Type SC (Silicone, general construction): One-part medium modulus, natural cure, synthetic sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, NS, Class 25, use NT, G, A, M, O with a minimum movement capability of  $\pm 50$  percent.

Joint Sealer Type SE (Silicone, Exterior construction): One-part low modulus, moisture curing, synthetic rubber sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, NS, Class 25, FS TT-S-001543A, Type, Class A with a minimum movement capability of +100 percent and -50 percent.

Joint Sealer Type SM (Silicone, Mildew-resistant): USDA approved one component acetoxy silicone rubber, mildew resistant, acceptable to local health officials, conforming to U.S. Food and Drug Administration regulation 21 CFR 177.2600, FS TT-S-001543A, Type Non-Sag, Class A, and FS TT-S-00230C, Type II, Class A and ASTM C 920, Type S, Class 25, Grade NS, use NT,G and A with a minimum movement capability of  $\pm 25$  percent, and a Shore A hardness of 20.

Compressible joint bead back-up: Compressible closed cell polyethylene, extruded polyolefin foam or polyurethane foam rod, 1/3 greater in diameter than width of joint. Shape and size of compressible back-up shall be as recommended by manufacturer for the specific condition used. Provide one of the following, or equal. (only closed cell rods will be considered). Primers: Furnish and install joint primers of the types, and to the extent, recommended by the respective sealant manufacturers for the specific joint materials and joint function. Bond-breaker tape, and temporary masking tape: Of types as recommended by the manufacturer of the specific sealant and caulking material used at each application, and completely free from contaminants which would adversely affect the sealant and caulking materials.

<b>DIVISION 8 – DOORS AND WINDOWS</b>
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**08 11 13**  
**STEEL DOORS AND FRAMES**

Furnish and install the following: Flush UL-Labeled and non-labeled interior and exterior steel doors, complete with internal reinforcing, hardware cut-outs; and provided with louver and glazed openings, where so indicated. Hollow metal frames for doors, UL-



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Labeled and non-labeled, complete with internal reinforcing. Labeled and non-Labeled Hollow metal frames for fixed-glazed window conditions or "borrowed lights", complete with internal reinforcing. Metal glazing beads, loosely attached to hollow metal frames and doors, where so indicated, for removal and permanent installation during glazing operations. Hot dip galvanizing of all exterior metal doors and frames. Preparation required in doors and frames to receive electrified hardware.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Amweld Building Products, Inc., Garrettsville OH., Ceco Company, Oakbrook Terrace IL., Curries Company / Essex Industries, Mason City IA., Steelcraft, an Ingersoll Rand Company, Republic Builders Products Corporation, McKenzie TN.

Construction: Doors Full flush commercial type, 1-3/4 inch thick (44.4 mm), unless noted otherwise herein or on the Drawings, meeting or exceeding the materials, gages, construction, and testing requirements of the referenced ANSI and SDI publications. Interior Doors: ANSI 250.8, Level 2, Model 1 (Full Flush), ANSI A250.4 Physical Performance Level B, (Heavy Duty) having 18-gage, 0.053 inch thick (1.3 mm) steel faces, with a minimum STC rating of 32. Cores for interior doors shall be Polystyrene. Exterior Doors: ANSI 250.8, Level 3, Model 2 (Seamless), ANSI A250.4 Physical Performance Level B, (Extra Heavy Duty) having 16-gage, 0.053 inch thick (1.3 mm) galvanized steel faces, with a minimum R factor of 14. Cores for interior doors shall be Polyurethane.

Materials for frames, reinforcement, anchors, anchor clips and related items: commercial grade cold-rolled steel conforming to ASTM A366 or commercial grade hot-rolled and pickled steel conforming to ASTM A569. Interior frames: 16-gage, 0.053 inch thick (1.3 mm), except as otherwise required for specific U.L. Label. Exterior frames: 14-gage, 0.067 inch thick (1.7 mm), with a zinc coating supplied by the hot-dip process conforming to ASTM A525 or A526, A60 or G60) coating weight standard. Exterior frames shall be thermally broken.

**08 14 16**  
**FLUSH WOOD DOORS**

Furnish and Install factory finished Interior Flush Wood Veneer Doors and accessories: 5-ply flush bonded solid-core wood doors and Flush fire-rated wood doors.

Manufacturers offering products which may be incorporated in the work include the following: Algoma Hardwoods, Inc., Algoma WI., Weyerhaeuser Company, Architectural Door Division, Marshfield WI, Eggers Industries, Architectural Door Division, Two Rivers WI., V-T Industries Inc., Holstein IA.

Fire Rated Doors - General Construction: AWI Quality Standard, Section 1300, Type FD. Door thickness: 1-3/4 inches, unless indicated otherwise. Models: Comply with the following AWI Quality Standard construction:

90 minute "B" label doors: Type "FD-1-1/2".

60 minute label doors: Type "FD 1".

45 minute "C" label doors: Type "FD 3/4".

Typical face veneer: AWI Quality Standards, 6th edition, (AWS Quality Standards Edition 1), "A" Grade veneer 1/32 to 1/41 inch (0.8 to 0.62 mm) thick, mechanically splice Select White Maple (*Acer saccharum*), Plain Sawn, with book matched grain and balanced panel face assembly. Core construction: Core: Non-combustible mineral sections. Stiles: The outer ply shall be hardwood rails matching veneers for species and color. Top and

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bottom rails: Birch in order to produce a smooth surface after finish has been applied. For all fire-rated doors installed in pairs with both leaves active, provide 20-gage formed steel edges, without astragal, wrapped with veneer matching faces of doors.

Non-Rated Solid Core Doors - General Construction: AWI Quality Standard, Section 1300, Type Particleboard PC-5. Door thickness: 1-3/4 inches, unless indicated otherwise. Door facing: Typical face veneer: AWI Quality Standards, 6th edition, (AWS Quality Standards Edition 1), "A" Grade veneer 1/32 to 1/41 inch (0.8 to 0.62 mm) thick, mechanically splice Select White Maple (*Acer saccharum*), Plain Sawn with book matched grain and balanced panel face assembly. Core: Particleboard complying with ANSI A208 Type 1, Grade 1-LD-2 having a density of 20 to 32 pounds per cubic foot. Edge Bands: The stile edge bands shall be a 4-ply edge band laminated to the core on four (4) sides per AWI 1300-G-3 Spec. Symbol PC-5 with Type II highly water-resistant glue, using the high frequency method. Four-ply rails of mill-option hardwoods shall be used. Outer ply for stiles shall be hardwood matching face veneers for species and color. Stiles and rails shall measure a minimum of 1 inches after trimming.

Glazing beads for "B" and "C" fire rated doors, wood veneered bead and Glazing beads for non-fire rated doors.

**08 31 00**  
**ACCESS DOORS AND PANELS**

Fire resistive rated and non-rated access panels and frames, shall be furnished under this Section, Scope & Quantity of access doors and panels to be furnished under this section shall be coordinated by the general contractor with work done by plumbing, electrical and HVAC trades where access to systems and devices by those trades is required.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: J.L. Industries, Bloomington MN., Karp Associates Inc., Maspeth NY., Miami-Carey Corp., Monroe OH., Nystrom Products Company, Minneapolis MN., Milcor, Inc. Lima OH., Larson Manufacturing Co., Brookings SD., Williams Brothers Corporation of America, Front Royal, VA.

For non-rated wall and ceiling surfaces: Flush panel door type meeting the following requirements: Frame type: For tiled walls: 16 gage Type 304 stainless steel flanged frame, with flange exposed to view 1 inch or less, For masonry walls: 16 gage galvanized bonderized steel flanged frame, with flange exposed to view 1 inch or less. For gypsum board walls and ceilings: 16 gage galvanized bonderized steel frame, with 22 gage galvanized steel drywall bead.

Door: Flush panel door as follows: Typical all wall types, except tile: 14 gage galvanized bonderized steel. For tiled walls: 14 gage type 304 stainless steel. Hinge: Concealed spring hinge enabling door to open 175 degrees and permit removal of door from frame.

For fire-resistance rated wall and ceiling surfaces: Standard flush panel door meeting the following requirements: Panel and frame rating: UL "B" label for 90 minutes.

**08 33 00**  
**ROLLING SERVICE DOORS**

Furnish and Install Electric Operated Overhead Insulated Rolling Doors. (Various Locations) Provide all related work, accessories, appurtenances, etc. as required for a complete installation. Provide steel door opening jamb and head members under this

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trade. Provide products by one of the following manufacturers: Overhead Door Corporation, Dallas, Texas., Cornell Iron Works, Inc. Mountaintop, PA, Raynor Garage Doors. Dixon, IL.

Basis of Design: Cornell Iron Works, Mountaintop PA - Cornell Ironworks Model ESD30 MATERIALS – Curtain: Slats: No. 5F, 22 gauge, Grade 40 steel, ASTM A 653 galvanized steel zinc coating. Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) structural steel angles. Fabricate interlocking sections with high strength nylon endlocks on alternate slats each secured with two 1/4" (6.35 mm) rivets. Provide windlocks as required to meet specified wind load. Curtain Configuration: Standard Curtain configuration. Guides: Fabricate with structural steel angles. Provide windlock bars of same material when windlocks are required to meet specified wind load. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar. Guide Configuration: Standard Guide Configuration. Counterbalance Shaft Assembly: Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheel for applying and adjusting spring torque. Brackets: Fabricate from minimum 3/16 inch (5 mm) steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures. Hood: 24 gauge galvanized steel with reinforced top and bottom edges. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.

**08 41 13**

**ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS - EXTERIOR**

Furnish and install aluminum thermal flush-glazed screw spline storefront system complete with entrances, hardware and associated pertinent accessories as indicated on Drawings and/or as specified in this Section. Manufacturers offering products which may be incorporated in the work include the following: EFCO Corp, Monett, MO., Kawneer Company, Inc., Norcross, GA., The Vistawall Group, Terrell, TX. Basis of Design: Storefronts: Thermal Flush-Glazed Screw Spline Storefront shall be equivalent to "System 403(T)" as manufactured by EFCO Corp. Monett, MO. Entrances: shall be equivalent to "Series D302 Medium Stile" as manufactured by EFCO Corp. Monett, MO. 1" Insulated glass shall be Viracon "VE1-2M", or equal by PPG Industries Inc, Glass Group, Pittsburgh PA or NSG Group, Toledo, OH as approved by Architect, constructed as follows: Exterior lite – 1/4 thick, clear color, fully tempered, with a surface coating of low-E on #2 surface. Air space of 1/2 inch, argon gas filled. Interior lite – 1/4 thick, clear color, fully tempered glass.

**08 44 13**

**GLAZED ALUMINUM CURTAIN WALLS**

Furnish and install architectural glazed aluminum curtain wall system complete with related components and pertinent accessories as indicated on Drawings and/or as specified in this Section. Manufacturers offering products which may be incorporated in the work include the following: EFCO Corp, Monett, MO., Kawneer Company, Inc., Norcross, GA., The Vistawall Group, Terrell, TX. Basis of Design: "Series 5600 Outside Glazed with Duracast Fiberglass Pressure Plate" curtain wall system as manufactured by EFCO Corp. Monett, MO. Glass: Shall be Type GL1: 1-1/16" laminated insulated



glass shall be Viracon "VE1-2M", or equal by PPG Industries Inc, Glass Group, Pittsburgh PA or NSG Group, Toledo, OH.

**08 45 00**  
**INSULATED TRANSLUCENT WALL PANEL SYSTEM**

Furnish & Install Insulated translucent glass fiber wall panel system with fixed sashes where identified on the drawings as "Translucent Wall Panel System". Translucent roof panels installed on Structural Steel Frame at canopies at main north and south entrances to Lobby. Accessories including but not limited to aluminum support angles, sill flashings, head and jamb panning, column and 2-piece mullion covers of various sizes where as indicated on drawings. Manufacturers offering products which may be incorporated in the work include, the following: Kalwall Corporation: Manchester NH., GSI, Grayslake, IL., Major Industries, Wausau WI. Extech, Pittsburg, PA. □ Translucent faces shall be manufactured by an insulated system fabricator specifically for architectural use. Interior face sheet: Color: White S-171 interior face or as selected by the Architect from the manufacturer's standard colors. Thickness: 0.045 inch. □ Exterior Face Sheet: Color: super-weathering Crystal exterior face of color as selected by the Architect from the manufacturer's standard colors. Thickness: 0.070 inch. □ Shoji grid pattern: 12" x 12". Aluminum I-beams: Fabricated from minimum 6063-T6 alloy with provisions for mechanical interlocking of muntin-mullion and perimeter to prevent high and low intersections which do not allow full bonding surface to contact with face material.

**08 51 13**  
**ALUMINUM WINDOWS**

Furnish and install aluminum heavy commercial casement, projected, and fixed flush-face architectural windows complete with hardware and related pertinent components as shown on Drawings and/or as specified in this Section. Glass and Glazing: All units shall be factory glazed. Manufacturers offering products which may be incorporated in the work include the following: EFCO Corp, (a Pella Company) Monett, MO., Kawneer Company, Inc., Norcross, GA., Wausau Window and Wall Systems, Wausau, WI. □ Project Out Windows: shall be equivalent to "Series 450G thermal- 4-1/2" Heavy Commercial projected flush face Window as manufactured by EFCO Corp. Monett, MO. □ Fixed windows: shall be equivalent to "450G thermal - 4-1/2" Heavy Commercial projected flush face Window as manufactured by EFCO Corp. Monett, MO. □ General Exterior Glass - 1" Insulated glass shall be Viracon "VE3-2M", or equal by PPG Industries Inc, Glass Group, Pittsburgh PA or NSG Group, Toledo.

**08 71 00**  
**DOOR HARDWARE**

Heavy duty commercial door hardware conforming to ANSI A156 Grade 1 series standards for materials and applications, ANSI A 117.1 and /or Uniform Federal Accessibility Standards for accessibility to the physically disabled, NFPA 80 for fire rated openings, and applicable building code requirements. Provide the following: mortise type locksets and latchsets; interchangeable lock cylinders; keying according to Owner's requirements and to match existing keying and key control system; full mortise type hinges and butts; continuous hinges at exterior doors; barrier free closers, door control and exit devices; through bolted push/pulls; door trim units including kickplates and edge trim; door stops; overhead door holders;

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soundstripping; weatherstripping and thresholds. Include all necessary screws, bolts, expansion shields, drop plates and all other devices, hardware and miscellaneous items required for installation and function of door hardware. Hardware finish: satin stainless steel on exposed surfaces. Coordinate work of this Section with doors and frames provided as part of the work of this Project and with Division 26 Electrical and Division 28 Electronic Safety and Security sections.

Manufacturers:

Butts and Hinges: Hager Companies ; Bommer; McKinney Hinge, Div. of Assa Abloy.; Stanley Hardware; H.B. Ives, Div. of Ingersoll-Rand; PBB World Class Hinges; Cal-Royal Products, Inc. □ Continuous Hinges: Hager Companies; ; Bommer; McKinney Hinge, Div. of Assa Abloy; Pemko; Select; PBB World Class Hinges □ Key Control System: Lund, Inc.; HPC; Telkee Inc. □ Locksets, Latchsets and Cylinders: Schlage Lock, Div. of Ingersoll-Rand[, "L" Series Mortise locksets][, "D" Series **Cylindrical** locksets]; No Substitutions. Coordinate keying with Town's keying system. □ Keying information: Vulcan Security (860) 289-8433; attn.: Gary Bambarra. Access Control Products: VingCard, Division of Assa Abloy "PROSONA SERIES" Electro-Mechanical Locks: Alarm Lock □ Flush Bolts (automatic where required), used at pairs of not requiring Panic Release □ Hardware: Rockwood Manufacturing; HB Ives, Division of Ingersoll Rand; Hager; Glynn Johnson, Div. of Ingersoll-Rand; Trimco Triangle Brass □ Exit/Panic Devices (provide U.L. label rated doors): Corbin/Ruswin, Div. of Assa Abloy, "5000" Series][; Sargent, Div. of Assa Abloy, "80" Series ][; Von Duprin, Div. of Ingersoll-Rand, "98/99" Series][; Precision Hardware, "1100/D-1200" Series][; DORMA Architectural Hardware "8916" Series][; No Substitutions] □ Push/ Pull Units: Hager Companies; Rockwood Manufacturing, HB Ives Division of Ingersoll - Rand; Trimco Triangle Brass; Burns Manufacturing, Inc.; MAG Security □ Overhead Surface Closers: [Norton, Div. of Assa Abloy. "PR7500/PR7700" Series][; Sargent, Div. of Assa Abloy, Inc., "351 (Heavy Duty Arms)" Series][; LCN, Div. of Ingersoll-Rand "4000 (Heavy Duty Arms)" Series][; DORMA Architectural Hardware "8916" Series][; No Substitutions] □ Electro Magnetic Hold Opens: Rixson, Div. of Assa Abloy; Sargent, Div. of Assa Abloy; ABH; LCN, Div. of Ingersoll-Rand; DORMA Architectural Hardware; Sargent, Div. of Assa Abloy. □ Electric Strikes: HES, Inc.; Von Duprin, Div. of Ingersoll-Rand; Folger Adam Co.; Security Door Controls. □ Door Control Devices: Rixson, Div. of Assa Abloy; Sargent, Div. of Assa Abloy; Glynn Johnson, Div. of Ingersoll-Rand; Trimco Triangle Brass; Burns Manufacturing, Inc.; MAG Security; DORMA Architectural Hardware. □ Kick and Mop Plates: Rockwood; Hager Companies; H.B. Ives, Div. of Ingersoll- Rand; Trimco Triangle Brass; Burns Manufacturing, Inc.; MAG Security □ Weatherstripping & Seals: Hager Companies; Pemko Manufacturing Co., Inc. Reese Enterprises, Inc.; National Guard Products. □ Thresholds: Hager Companies; Pemko Manufacturing Co., Inc.; Reese Enterprises, Inc.; National Guard Products. □ Automatic Drop Seals: Hager Companies; Pemko Manufacturing Co., Inc.; Reese Enterprises, Inc.; National Guard Products. □ Sound Stripping: Hager Companies; Pemko Manufacturing Co., Inc.; Reese Enterprises, Inc.; National Guard Products. □ Astragals: Hager Companies; Pemko Manufacturing Co., Inc.; Reese Enterprises, Inc.; National Guard Products □ Door Stops: Rockwood Manufacturing; H.B. Ives, Div. of Ingersoll-Rand; Hager Companies; Glynn Johnson, Div. of Ingersoll-Rand; Trimco Triangle Brass; Burns Manufacturing, Inc.; MAG Security □ Electrified Hinges: Hager Companies; Stanley Hardware; McKinney Hinge, Div. of Assa Abloy; Bommer; PBB World Class Hinges. □ Electrified Power Transfers: Precision Hardware; Von-Duprin, Div. of Ingersoll- Rand; Securitron,

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Div. of Assa Abloy; Security Door Controls; DORMA Architectural Hardware. □  
Card Readers: Security Door Controls, HID, Honeywell International Inc., □  
Stanley Security Solutions Inc. and Coordinated with Owner's security system  
with card swipe reader.

<b>DIVISION 9 – FINISHES</b>
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**09 22 00**

**METAL SUPPORT ASSEMBLIES**

Furnish and install: Metal furring and framing where indicated on the Drawings, including cross bracing and knee bracing, Metal ceiling and soffit framing. Reinforcing plate blocking. Deflection track assemblies at tops of metal stud partitions.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Dietrich Industries, Inc., Pittsburgh PA., Georgia Pacific Corporation, Gypsum Division, Atlanta GA., Marino Industries Corp., South Plainfield NJ., National Gypsum Company, Gold Bond Products Division, Charlotte NC., Unimast Incorporated, Franklin Park IL.

Framing materials include: "Hat shaped" Furring channels 7/8 by 2-3/4 inch, 25 gauge hot-dip galvanized steel conforming to ASTM C 645. 'C-shaped' screw studs, 20 gauge hot-dip galvanized steel complying to ASTM C 645, 'U-shaped' hot-dip galvanized steel track conforming to ASTM C645, of gage and width to match respective stud sizes, Internal reinforcement for various stud conditions, and bracing 10 gauge, minimum, galvanized steel, Deflection Track top runner with extended flanges fabricated from steel sheet complying with ASTM A 653 or ASTM A 568. Furnish cross bracing and knee bracing, as required to assure a completely rigid assembly on metal stud partitions and furred areas.

**09 29 00**

**GYPSON BOARD**

Furnish and install: Taped, compounded and sanded gypsum board finishes including all trims, metal ceiling coves, reglets, and accessory components, Shaftwall system, including framing, liner panels, and gypsum board finish components, Moisture resistant gypsum board, Cement board substrate for wall tile, Abuse resistant gypsum board. Install access panels occurring in gypsum board work furnished by Section 08 31 00- Access Doors and Panels, and by trades requiring the same.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal:

Shaft wall system components and gypsum board product: United States Gypsum Company, Chicago IL. (USG), National Gypsum Company, Gold Bond Products Division, Charlotte NC. (Gold Bond), Georgia Pacific Corporation, Gypsum Division, Atlanta GA.

Abuse resistant gypsum board (ARGB): United States Gypsum Company, Chicago IL. (USG).

High Impact gypsum board (HIGB): United States Gypsum Company, Chicago IL. (USG).

Cement board (tile substrate): Glasscrete Inc., Bakersfield, CA., WR Bonseal Inc., Charlotte, NC., United States Gypsum Company, Chicago, IL.



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Polyvinyl chloride trim and accessories: Plastic Components, Inc., (Vinyltech) Miami FL., Vinyl Corporation, Miami FL., Alabama Metal Industries Corporation, (AMICO)Birmingham, AL.

Reveal trim: Pittcon Industries, Inc., Riverdale MD., Fry Reglet Corporation, Norcross GA, Gordon Inc., Shreveport LA., MM Systems Corporation, Tucker GA.

Materials include:

Gypsum Board 5/8 inch regular and Type X meeting ASTM C1396, tapered edge, Abuse resistant gypsum board (ARGB) 5/8" impact resistant ASTM C-1278, tapered edges. Board shall consist of an exposed face of gypsum and cellulose fibers, an unexposed face having glass fiber-mesh scrim embedded in gypsum and cellulose fibers, and a perlite core. Performance properties: Surface abrasion: .284 inch, when tested in accordance with ASTM D4777 with 25 pound added weight, 30 abrasion cycles, Surface indentation: 0.11 inch, when tested in accordance with ASTM D5420 with 72 in-lb drop energy, Soft body impact, when tested in accordance with ASTM E695, Surface failure: 180 ft-lb, Deformation failure: 240 ft-lb, with L/240 deflection, Penetration failure: More than 300 ft-lb, Hard body impact, when tested in accordance with swinging ram apparatus: 175 ft-lb.

Moisture resistant gypsum board: Conforming to ASTM C 1396 and C 630, 5/8 inch thick, tapered edges.

Cement board, for use as substrate for ceramic tile: nominal 1/2 inch thickness manufactured for interior or exterior application, glass fiber reinforced, with a minimum compressive strength of 2,500 pounds per square inch and minimum flexural strength of 1,000 pounds per square inch.

Exterior Gypsum ceiling and soffit board: Conforming to ASTM C-931, fire rated 5/8 inch thick, supplied in 48 inch widths, having tapered edges, equal to USG Sheetrock brand "Exterior Gypsum Sheathing Board," or Gold Bond brand "Exterior Soffit Board".

Sag-resistant gypsum board ceiling panels: non-rated 1/2-inch thick, 48 inch width, of lengths to minimize end joints, with tapered edges, conforming to ASTM C36, ASTM C1395 and ASTM C1396.

Flexible Gypsum Board: ASTM C 1396/C 1396M. 1/4-inch thick with tapered edges. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

## **09 22 10 GYPSUM SHEATHING**

Furnish and install exterior sheathing board on cold formed metal framing. Comply with applicable requirements of ASTM C 646 - Steel Drill Screws for the Application of Gypsum Sheet Material to Light Gage Steel Studs, GA 201 - Gypsum Board for Walls and Ceilings, and all applicable federal, state and municipal codes, laws and regulations for fire rated assemblies.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Georgia Pacific Corporation, Gypsum Division, Atlanta GA., United States Gypsum Company, Chicago IL. (USG)., National Gypsum Company, Gold Bond Products Division, Charlotte NC. (Gold Bond).

Sheathing Board: Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M, 1/2 inch (12.7 mm), regular type, or 5/8 inch (15.9 mm), Type X, where required to achieve specified UL ratings, Square Edges.

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Accessories include: Fasteners: ASTM C 1002, Type S-12 fine thread rust resistant 1 inch long self-drilling screws. Screws shall comply with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick. Joint Tape: 10-by-10 glass mesh, Joint Compound for Sheathing Applications.

**09 30 13**  
**CERAMIC TILE**

Furnish and install the following: Flooring tile, Interior wall tile, Tile base and associated trim, Stone thresholds and saddles, Fluid applied waterproofing membrane, Anti-fracture membrane, Installation systems, adhesives, mortars and grouts, Stainless steel edging material and trim, Control joints in tiled floors. Perform drilling and cutting in tile surfaces, as required to accommodate penetrating items of other trades, from templates and instructions furnished by the respective trades.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal:

Unglazed ceramic mosaic floor tile: Dal-Tile Corp., Dallas TX. Contact: Paula Tosti 978-461-2928, American Olean Tile Company, Lansdale PA.

Glazed ceramic wall tile: Daltile Corp, Dallas TX., American Olean Tile Company, Lansdale PA, Sikes Corp., Florida Tile Division, Lakland FL., United States Ceramic Tile Company, Sparta OH.

Mortars, adhesives & Grouts: C-Cure Chemical Company, Inc., Houston TX., Laticrete International, Inc., Bethany CT., Mapei Corporation, Elk Grove IL.

Edging materials: Schlüter Systems L.P., Plattsburgh NY (800 361-3127), Ceramic Tool Company Inc., Waukesha WI (800-236-5230), Blanke International., Atlanta GA (800-787-5055).

Ceramic Mosaic Tile: Standard Grade unglazed ceramic mosaic tile, conforming to ANSI A137.1, nominal 2 by 2 inch by 5/16 inch thick, porcelain body, cushion-edges. Dal-Tile Corp: "Keystones" series or approved equal. Base tiles at 2 x 2 inch built up with coved tile. Trim shall include bull nosed internal and external corners and exposed edges and other shapes required to produce a completely finished installation.

Glazed Ceramic Wall Tile: Standard grade glazed ceramic tile, conforming to ANSI A137.1, nominal 4-1/4 by 4-1/4 inch 5/16 inch thick, porcelain body, square-edged. Dal-Tile Corp: "Dal-Semi-gloss," and Dal-matte or approved equal. Base tiles at 4-1/4 by 4-1/4 inch: wall tile. Trim shall include bull nosed internal and external corners and exposed edges and other shapes required to produce a completely finished installation. Provide all bases, caps, stops, returns, trimmers, and other shapes required to produce a completely finished installation.

Stone Thresholds: Marble thresholds complying with Class "A" of the Marble Institute of America, in color selected by the Architect from standard colors of the approved fabricator, shaped to provide a comfortable transition between tile and other floor finishes, with smooth matte surface finish.

Setting materials: "Low VOC" thin-set polymer-modified portland cement dry-set mortar for tile walls and floors: complying with the bond strength requirements of ANSI A118.4. Acceptable products include Mapei "Kerabond" with "Keralastic" additive or approved equal.

White thin-set mortar: Two component, flexible, rapid – set, acrylic thin-set mortar system formulated for interior and exterior installations. Approved products Daltile Ultimate Bonding System – Rapid or approved equal.

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Medium-bed latex modified portland cement mortar Dry-set mortar for large size modular tile and dimensional stone: complying with the bond strength requirements of ANSI A118.4, compatible with color of tile. Acceptable products include Mapei product: "Ultra/Flor" with "Keraply" additive, or approved equal.

Fluid applied anti-fracture membrane: Complying with German national standard (DIN18156, part 2), and STM C627 classification "Extra Heavy". Two component liquid rubber membrane used with 20 mil thick flexible polyvinyl chloride sheeting reinforcing material. Acceptable products include Mapei "Planicrete W" (urethane based), or approved equal.

Epoxy Grout: 100 percent solids, water cleanable, complying with ANSI A118.3 and ISO 13007 RG for floor applications. Color to be selected by Architect from manufacturer's standard range. Acceptable products include Mapei Kerapoxy, or approved equal.

Acrylic modified Portland cement (unsanded) grout conforming to ANSI 118.6. Acceptable products include Mapei product: "Keracolor Wall" with acrylic latex additive "Plastijoints", or approved equal.

Sealant for tile to tile vertical, and horizontal non traffic joints: Silicone, mildew resistant, equal to Tremco Spectrim 1, or approved equal.

Sealant for tile to tile, horizontal pedestrian traffic joints: horizontal self-leveling 2-component urethane sealant equal to Tremco THC-900, or approved equal.

**09 30 19**  
**PORCELAIN TILE**

Furnish and install the following: Porcelain paver floor and wall tile. Porcelain tile base and associated trim. Installation systems, adhesives, mortars, and grouts. Sealant and backing materials for control joints within tiled areas, around all items which penetrate the tiled wall and floor surfaces, and between tile and intersecting dissimilar surfaces and items. Fluid-applied waterproofing membrane at wet areas over occupied spaces. Anti-fracture membrane. Perform drilling and cutting in tiled surfaces, as required to accommodate penetrating items of other trades, from templates and instructions furnished by the respective trades.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Dal-Tile Corp., Garden State Tile, Crossville Inc., or approved equal. Basis of Design: Portfolio and Keystone Series by Dal-Tile Corp.

Provide accent tiles where indicated on the Drawings.

Recommended joint width: 3/16".

Tile pattern: As indicated on the Drawings.

Thresholds: Where indicated on the Drawings, provide marble thresholds complying with Class "A" of Marble Institute of America, in color selected by the Architect from standard colors of approved fabricator, shaped to provide a comfortable transition between tile and other floor finishes, with smooth matte surface finish and in the dimensions and thickness shown on the Drawings.

Anti-Fracture Membrane: Subject to compliance with the requirements specified herein, manufactures offering products which may be incorporated in the work include the following, or approved equal: Laticrete International Inc., Mapei Corporation, Bostik, Inc., and Ardex Americas. Anti-fracture membrane to be thin, cold applied, single component liquid and load bearing. Reinforcing fabric (if required or used) to be non-woven, rot-proof specifically intended for crack suppression membrane.



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Mortars: Subject to compliance with the requirements specified herein, manufactures offering products which may be incorporated in the work include the following, or approved equal: Laticrete International Inc., Mapei Corporation, Bostik, Inc., and Ardex Americas.

Non-Sag Thin-set Mortar (All Wall Tile Installations): Non sag, Latex Portland Cement Thin Bed Mortar for thin set and slurry bond coats to be weather, frost, shock resistant, non-flammable. Basis of Design: Laticrete 255 MutilMAX thin-set mortar.

Medium-bed Thin-set Mortar (All Floor Tile Installations): Latex Portland Cement Thin Bed Mortar for thin set and slurry bond coats to be weather, frost, shock resistant, non-flammable. Basis of Design: Laticrete 220 Marble and Granite gauged with 333 Super Flexible Admix.

**09 51 00**  
**ACOUSTICAL CEILINGS**

Furnish and install suspended acoustical tile ceiling including suspension system and associated edge moldings.

Manufacturers offering products which may be incorporated in the work include the following, or equal: USG Interiors Inc., Chicago IL., Armstrong World Industries, Inc., Lancaster PA., CertainTeed Corp., Valley Forge, PA.

Ceiling panels shall be as follows:

ACT-1 Ceiling panel (classrooms, corridors and media center), white, 3/4-inch thick, 24 by 48 inch panels, tegular, ASTM E-1264 Type IV, Form 1 and 2, Pattern E,G; class A flame spread, mineral fiber, fine-textured panel, LR 0.89, NRC 0.70, CAC .35,

ACT-2 Ceiling panel (bathrooms): white, 3/4-inch thick, 24 by 48 inch panels, tegular, ASTM E-1264 Type III, Form 2, Pattern CE; class A flame spread, cast mineral fiber board, LR 0.83, NRC 0.50, CAC 35.

ACT-3 Ceiling panel (cafeteria), white, 24 by 24 inch panels, tegular, ASTM E-1264 Type W, Form 2, Pattern E; class A flame spread, cast mineral fiber board, LR 0.87, NRC 0.80, CAC 35.

ACT-4 Ceiling panel (kitchen), white, 24 by 48 inch panels, square edge, ASTM E-1264 Type IX, Form 2, Pattern G; class A flame spread, non-combustible, LR 0.89, CAC 33.

ACT-5 Ceiling panel (music room – alternate in a checkerboard pattern with ACT-1): Gel coat White, 24 by 48 inch panels, pyramid lay-in sound diffusers.

ACT-6 Ceiling panel (Platform): 1-1/4 inch thick, 46-1/2 by 75 inch panels, 'DuraBrite' scrim on all sides, finished square edges, ASTM E-84; class A flame spread, mineral fiber panels, LR0.90, 30 Sabin per panel using ASTM C423, or 78% more sound absorption than the same square footage of NRC 0.70 continuous ceiling. Include extended hanging cables and escutcheon kit

ACT-7 Ceiling panel (Break-out Areas): Maple real wood veneer, 3/4 inch thick, 24 by 24 inch panels, Clear semigloss coating, 9/16" square tegular, ASTM E-1264; class A flame spread, 30 Sabin per panel using ASTM C423, or 78% more sound absorption than the same square footage of NRC 0.70 continuous ceiling. Include perimeter trim: equal to "Axiom Classic" trim by Armstrong, and Paired Accent System: Equal to Armstrong AXIOM Paired Accent System 10" straight trim - Item# AX10STR. Provide 10" welded end cap - Item# AX10WEC.

Ceiling grids shall be as follows:

ACT-1, ACT-2, ACT-3 and ACT-5 Ceiling grid: 15/16 inch exposed tee grid in white color.

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ACT-4 Ceiling grid: 15/16 inch fire-rated, double-web, hot-dipped galvanized steel body and aluminum cap in white color.

ACT-7 Ceiling grid: 9/16 inch exposed tee grid in black color (confirm color selection with architect).

For ACT-7, include back-bracing as recommended by manufacturer for additional support of perimeter trim. Use the WW Tegular border clips in lieu of field cutting a tegular edge.

Edge moldings: Where not otherwise noted, at the perimeter of all ACT ceilings shall be grid system manufacturer's standard L-shape edge trim compatible with exposed grid system and color matched.

Hangers: Unless otherwise noted, use soft temper, pre-stretched galvanized carbon steel wire, conforming to ASTM A641, with a yield stress load of at least three times design load, but not less than 12 gauge.

Joint Sealer: One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paint able.

**09 64 66**

**WOOD ATHLETIC FLOORING**

The work of this Section consists of refinishing existing wood athletic flooring and related items, as indicated on the Drawings and specified herein.

Work shall include sanding and refinishing existing wood athletic flooring.

Sports Finishing System: Seal shall be Bona Sport Poly 275 (2 coats). Low VOC oil modified sealer. Gameline paint shall be Bona Kemi Courtlines gamelines paint and must be compatible with the floor finishing system.

Finish: Provide four (4) color center school logo and game lines in four (4) colors to define the following: One full basketball court with school logo and school team names, Two cross-court basketball courts, One full-court volleyball court, and four badminton courts.

**09 65 19**

**RESILIENT TILE FLOORING**

Prepare substrates to receive resilient tile flooring as required to insure specified tolerance level for finish surface. Preparation work includes patching, smoothing and leveling substrate, including: Grinding down high spots of substrate, Providing Portland cement-based latex underlayment (filler).

Furnish and install the following: Linoleum Sheet Flooring and Adhesive. Manufacturer's offering products which may be incorporated in the work include the following, or equal: Forbo Flooring, Inc., Armstrong, Johnsonite, or approved equal. Basis of Design: "Marmoleum Real Linoleum Sheet and Linoleum Adhesive as manufactured by Forbo Flooring, Inc.

Linoleum Sheet Flooring and Adhesive: Homogeneous linoleum sheet made primarily of natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendared onto natural jute backing. Pattern and color shall extend throughout total thickness of material. Width: 2 Meters (79"). Length: 32 Meters (105 linear feet). Gauge: 2.5mm (1/10"). Backing: Jute. Adhesive: Forbo Sustain 1195M adhesive.

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Seaming per manufacture requirements. Topshield 2 Finish: Applied during the manufacturing process.

Vinyl Base: 4 inches high, coved, ribbed back, 1/8 inch thick, rounded top rolled goods. Include pre-molded end stops, job-formed external and internal corners, Up to 8 colors

Filler for patching, smoothing and leveling subfloors and underlayment: Portland cement-based latex underlayment acceptable to flooring manufacturer, equal to the following: Kiesel, Inc., product "Servofine F333", Premium Cementious Skincoate, Ardex, Inc., products "Feather Flash" and "Ardex SD-P", Quikrete Companies, product "Fast-Set Underlayment 1248".

Adhesives shall be Waterproof, Latex based, non-flammable in wet state, with NFPA Class A rated, VOC compliant, equal to Tarkett 800 Pressure Sensitive Adhesive". Acceptable manufacturer or equal: Johnsonite a Tarkett Company, Armstrong World Industries, Lancaster, PA., DAP Incorporated, Dayton OH., W.W. Henry Company, Huntington Park CA., Roberts Consolidated Industries, Inc., City of Industry, CA.

Transition and edge strips: Homogeneous vinyl, of profiles required for thickness of abutting materials, Tapered or bull nose edge.

Cleaning material: Domestic neutral floor detergent having a pH 7 or pH 8, as recommended by the flooring manufacturer.

**09 65 60**  
**RUBBER FLOORING**

Furnish and install the following: Rubber flooring at cafeteria and ramps, as scheduled and on drawings, Raised-stud sheet rubber stair treads/risers, Raised-stud sheet rubber flooring tile at stair landings, Rubber base related to flooring of this section, Transition strips wherever edges of resilient rubber flooring materials abut dissimilar flooring, where no thresholds occur, preparation and leveling of substrate.

Manufacturers offering products which may be incorporated in the work include the following, or equal: Freudenberg Building Systems Inc., Lawrence MA., Endura Rubber Flooring, Waltham MA., Johnsonite a Tarkett Company, Roppe Corporation, Fostoria OH.

Stair Risers: One piece nosing/riser/tread combination piece with integral visually impaired strips. Raised-stud one piece synthetic rubber nosing-tread-riser combination, nominally 50 inches wide and 0.14 inch thick, with 0.02 inch thick raised round studs; equal to Freudenberg Building Systems Inc., Lawrence MA, product "Norament - 825C, Article 493". Up to 8 colors from the manufacturers full range of colors.

Landings: Raised-stud synthetic rubber flooring tile with integral visually impaired strips, equal to Norament 825 C round, Article 1902, raised round pastilles, nominally 20 inches square(19.68 x 19.68) actual size and minimum 0.13 inch thick, with 0.02 inch thick raised round studs or hammered. Tile shall be rated Class 1 flame resistant rated by ASTM E648 and have a minimum shore hardness of 85, when tested in conformance with ASTM D-2240. Nora rubber content approximately 38%. Up to 8 colors from the manufacturers full range of colors.

Hammered Rubber Tile Flooring: Product Name:, Johnsonite "cityscape" hammered surface design, 3.175 mm overall thickness, 24" inches by 24" inches, ASTM F 1344, for solid color homogeneous tiles and through-mottled tiles as applicable, Taber abrasion test, ASTM D 3389, H-18 wheel, 500 gram load, 1000 cycles, gram weight loss < 0.60, Hardness: ASTM D 2240, Shore A, > 85, Slip Resistance: Static coefficient of friction



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(James Test), ASTM D 2047, equal to or greater than > 0.5, Flammability: ASTM E 648; NFPA 253; NBSIR 75 950 > 0.45 watts per square centimeter, Class 1, Smoke Density: ASTM E 662, NFPA 258, NBS smoke density < 450, Bacteria Resistance: Products shall be resistant to bacteria, fungi, and micro-organism activity, according to ASTM E 2180 and ASTM G 21, Manufacturer shall be ISO 14001 Environmental Management Systems Certified

Rubber Bases: synthetic rubber covered base, nominally 4 inches high and 0.11 inch thick 100' rolls; equal to Freudenberg Building Systems Inc., Lawrence MA, product "Nora - S1026U". Colors from manufacturer's full range of colors. Include premolded end stops of same material, size and color as base. Job-form all external and internal corners from base material.

Accessories: Skim coat concrete substrate for smoothing minor imperfections where required and as recommended by manufacturer. Portland cement-based latex underlayment acceptable to flooring manufacturer, equal to the following: Ardex, Inc., products "Feather Flash" and "Ardex SD-P", Quikrete Companies, product "Fast-Set Underlayment 1248", Silpro Masonry Systems Inc., product "Masco Latex Cement".

Adhesives and primers: Waterproof, acceptable by the resilient flooring manufacturer.

Transition strips: Homogeneous vinyl, of profiles required for thickness of abutting materials

Cleaning material: Domestic floor detergent, as recommended by the flooring manufacturer.

**09 66 23**  
**EPOXY TERRAZZO FLOORING**

Furnish necessary material, labor, and equipment required to prepare designated areas and install Epoxy Terrazzo flooring with divider and accessory strips

Manufacturers offering products which may be incorporated in the work include the following, or equal: Dur-A-Flex Inc, East Hartford, CT, American Terrazzo, Garland, TX, Master Terrazzo Technologies, LLC, Hockessin, DE, or approved equal by the Architect.

**09 67 23**  
**RESINOUS FLOORING**

Furnish necessary material, labor, and equipment required to prepare designated areas and install Resinous Flooring and Cove Base System.

Manufacturers offering products which may be incorporated in the work include the following, or equal: General Polymers Corp., Cincinnati, OH., Crossfield Products Corp., Roselle Park, NJ., PolyMax/Milamar Coatings LLC, Oklahoma City, OK.

Basis of Design: "General Polymers AquArmor C Coating, BEREATHABLE FLOOR COATING SYSTEM as manufactured by Sherwin Williams consists of 3460 AquArmor WBE as Primer, 3460 AquArmnr WBE as fill coat, 4408 WB Polyuretahne as Topcoat. The total thickness will be 8-10 mills.

For patching, smoothing, leveling and final sloping of floors to floor drains, Provide products equal to Sherwin Williams TPM-#79 Slope and Fill Mortar.

**09 68 00**

## **CARPET**

Prepare substrates to receive carpet as required to ensure specified tolerance level for finish surface of carpeting. Preparation work includes patching, smoothing and leveling subfloors and underlayment, including: Grinding down high spots of substrate, providing Portland cement-based latex underlayment (filler), Cleaning subfloors as required for installation of carpet.

Furnish and install carpeting directly adhered over floors, including all accessories necessary to complete the work.

Manufacture: To establish a standard of quality, design and function desired, specifications have been based on Mohawk Group. company products. Similar products manufactured by others, will be considered as an equal by Tandus Commercial Carpet and Mannington Commercial Carpet.

Carpet has been based on "Streetscapes/ GT308" and "Hustle and Bustle / GT307" as manufactured by Lees - Mowhawk Group.

Carpet, shall conform with or pass tests of the following Standards: ASTM D-2859 (Methenamine Reagent Pill Test), ASTM E-648 (Flooring Radiant Panel Test): Class I (Minimum Average CRF of 0.48), NBS Smoke Chamber Test: Maximum average of 450, AATCC-134 (Electrostatic Propensity): Maximum electrostatic generation below level of human sensitivity. Carpet, including all components, shall be 100 percent recyclable. Floor coverings selected shall be recycled at the end of their useful life in an environmentally responsible program. The full resource potential of returned material shall be utilized by reusing and recycling 100 percent of the returned carpeting in new, value-added products. No carpeting returned for recycling shall be placed in a land fill or incinerated.

Setting materials and adhesives shall be "Low VOC" products complying with LEED Requirements and procedures. Filler for patching, smoothing and leveling subfloors and underlayment: Portland cement-based latex underlayment acceptable to flooring manufacturer, equal to the following: Ardex, Inc., products "Feather Flash" and "Ardex SD-P", or approved equal.

Adhesives for carpeting: NFPA Class A or UBC Class 1 types, as determined by ASTM E-84 Tunnel Test, as recommended by Carpet manufacturer for application and intended use. Acceptable manufacturers include: Advanced Adhesive Technology, Inc, Dalton GA., DAP Incorporated, or equal.

Rubber transition strips, carpet reducers, edgings and accessories: Homogeneous rubber, in colors as selected by the Architect. Acceptable manufacturers: Johnsonite, Middlefield OH., Mercer Products Company, Orlando FL., Roppe Corporation, Fostoria OH.

## **09 72 00 WALL COVERINGS**

Furnish and install digital wall coverings over GWB partitions referred to on the drawings as "wall covering with custom graphics. Furnish and install wall covering at Lobbies, Break-Out Areas in Corridors.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Design-Tex, a Steelcase Company, Boston, MA., MDC Wallcoverings, Elk Grove, IL., Printerior, Chicago, IL.

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Custom Graphics to be printed large scale onto the wall covering shall be provided by the Owner/ Architect. Wallcovering for GWB substrate shall be PVC face (80%) with 100% post-consumer recycled PET backing (20%), up to 54" wide, Weight: 20 oz/lin yd, Print Technology: UV direct, ASTM E-84 Class A, All panels are printed with 2" bleed on all edges and between panels. An overlap/double cut installation method is used. Provide all accessories, including but not limited to Low VOC setting materials, adhesives and primers as recommended by the wallcovering/display board manufacturer.

**09 77 00**  
**FIBER-REINFORCED LAMINATE WALL PANELS**

Furnish and install fiberglass reinforced laminate wall panels (FRL).

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Panolam Industries International Inc. or approved equal.

FRL Panel Properties: Product: Thermo-fused melamine overlay, decorative paper and Fire Rated phenolic paper with fiber reinforcing inner layers, Nominal Thickness: 0.088 inch, Panel net size 36" X, 48" X and 60" X , 96", 120" and 144", Surface Burning Characteristics: Rating of 25, or less, as tested to ASTM E84, Smoke Developed: 55, tested to ASTM E84, Wear Resistance: 3500, tested to NEMA3.13, Flexural Strength: 20,148 psi, tested to ASTM D790, Sustainability, Indoor Air Quality: GREENGUARD Gold Certification. Include all standard aluminum trim available in the appropriate size and configuration: Division Bars (between panels), Inside corners, Outside corners, Standard End Cap (top molding), Aluminum moldings as available from Nudo Products 1500 Taylor Ave Springfield, IL., or approved equal. Up to four finish colors based on Pionite and Nevamar High Pressure Laminate color palette.

Adhesive: – PL Premium Polyurethane Construction Adhesive by Henkel in 5-gallon pails.

**09 77 03**  
**FIBERGLASS REINFORCED PLASTIC WALL PANELS**

Furnish and install fiberglass reinforced plastic wall panels where shown on the Drawings.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Crane Composites, Inc., Joilet, IL. or approved equal.

Product(s)/System(s) equivalent to: Kemlite Fiberglass Reinforced Plastic (FRP) Panels with Surfaseal Surface Protection: Size: 4 feet x 8 feet & 4 feet x 10 feet, Class A Skin: 0.09 inch (2.3 mm) embossed Fire-X Glasbord. Provide low VOC adhesive and all other accessories as required by panel manufacturer, including but not limited to, moldings, J-trim, heavy-duty corners batten strips and fasteners.

**09 84 13**  
**FABRIC WRAPPED ACOUSTICAL WALL PANELS**

Furnish and install back mounted fabric wrapped acoustical wall panels with impact-resistant face in the following locations or identified on the Drawings: Lobby, Music, Cafeteria, Gymnasium / Platform, Media Center.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Decoustics, Etobicok, Ontario Canada, AVL Systems Inc.,



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Ocala FL., Corporate Acoustic Systems, Poughkeepsie NY., Armstrong World Ind. PA, Sound Concepts.

Fabric Wrapped Acoustic Panel: Factory pre-fabricated, fabric covered panels. Perimeter edges shall be chamfered. Fabric wrapped absorptive acoustical wall panels: 6 - 7 lb./ft.<sup>3</sup> density semi - rigid fiberglass core board with woven fiberglass scrim face and chemically hardened edges; equal to Decoustics "Hir" panel, 1 1/8" overall thickness. Nrc rating 0.80 (+/- 0.05).

Mechanical Mounting system: Concealed, self-aligning, 20 gauge hot-dipped galvanized steel Z-clips and wall mounting clips, recessed into panel to allow back of panel to lie flush with wall surface.

Acoustic Panel Fabric: Flame retardant treated conform to California Bulletin #117, equal to the following patterns and colors: Knoll Pattern "Relay #W1020", Color: Almond #W1020 / 2 and Knoll Pattern "Criss Cross #W305", Color Parchment #W305/2. All fabric in widths of 66".

**09 84 20**  
**WOOD FIBER ACOUSTICAL PANELS**

Furnish and install cementitious wood fiber plank acoustical wall panel systems with installation accessories. Location: Gymnasium.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Tectum Inc., Newark OH., Martin Acoustical Products, Bogart GA.

Wood Fiber Wall Panel System: Material: Aspen wood fibers bonded with inorganic hydraulic cement, thickness: 2" tectum Base, 1" tectum furring, beveled edge, Factory paint, custom color, Mounting Style: screw attached to suitable substrate.

**09 91 00**  
**PAINTING**

This Section consists of painting work where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Painting work includes but is not limited to the surface preparation and application of coated finishes, and subsequent touch-up, of interior and exterior items and surfaces as indicated on the Drawings and/or as scheduled herein.

Scope of painting work: In general, without limiting the generality thereof, the following surfaces, fixtures and equipment require a painted finish: Gypsum board partition and wall surfaces, Concrete Masonry Unit partitions and interior wall surfaces, gypsum board ceilings and soffits, metal doors and frames, interior steel lintels exposed to view, interior stringers, stair pans, handrails and guardrails, exterior galvanized handrails, exposed to view structural steel, exposed to view sprinkler and rain leader piping, exposed to view HVAC ducts and piping, exposed to view electrical conduit, data cable, and raceways, wood interior trim, wood fiber (Tectum) wall panels, (including factory primed and finished panels), aluminum ceiling cove, heat resistant coating for boiler stacks, roof top equipment, exterior galvanized bollards, access panels and frames, unit masonry assemblies, exposed to view suspended ceiling aircraft cable.

DO NOT PAINT the following surfaces and materials: Concealed from view surfaces, except as indicated otherwise in the Contract Documents or as specified herein, chrome or nickel plating, stainless steel, bronze, brass, aluminum other than mill finished or factory primed, factory finished mechanical and electrical equipment, pumps, machinery

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and similar items which occur in mechanical, storage or equipment rooms or areas, factory finished materials, specialties, and accessories unless otherwise specified, ceramic tile, acoustical tile, resilient flooring, wood flooring, and other integrally finished floor, wall and ceiling finishes, prefinished millwork items, fire resistant testing and certification labels, code required labels, safety warning labels, performance rating plates, nomenclature plates, identification plates, and similar other labels.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal:

Paints and general finishes: Sherwin Williams, Cleveland OH., Benjamin Moore & Company, Montvale, NJ., ICI – Paints, Strongsville Oh.

Exterior epoxy finishes and aliphatic acrylic polyurethane finishes: Courtaulds Coatings, Inc., - International Paint, Houston TX., Tnemec Company Inc., Kansas City, MO., PPG Industries, Inc., Pittsburgh PA.

Interior stains and clear finishes for wood: Samuel Cabot, Inc., Boston MA., PPG Architectural Finishes Inc., Olympic Home Care Products Division, Pittsburgh PA.

Cold galvanizing touch-up paint: Z.R.C. Products Company, Quincy MA., Duncan Galvanizing, Malden Ma., Rustoleum Corp., Vernon Hills IL.

Assume full responsibility for proper performance of materials, for method application, and for compatibility of materials applied over shop coats or other coats previously applied, including but not limited to primers, sealers, preservative treatments, etc. Notwithstanding specific schedules in this Section, select primers which have been verified to be appropriate for each of the substrates and finishes encountered.

Provide miscellaneous painting materials such as linseed oil, shellac, turpentine, and thinner of the highest quality.

Sealant for fill of minor cracks in GWB prior to painting, One component acrylic latex caulking compound, conforming to FS 19-TP-21M and ASTM C 834, paintable within 24 hours after application, with a minimum movement capability of  $\pm 12.5$  percent, equal to one of the following: Sonnaborn Building Product Inc., Minneapolis MN.; Product – “Sonolac”, Tremco, Beachwood OH.; Product – “Acrylic Latex 834”, Woodmont Products; Product – “Chem-Calk 600”, Pecora Corporation, Harleysville PA.; Product – “AC-20+”. All sealants used under this section shall meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

**09 96 00**  
**HIGH PERFORMANCE COATINGS**

This Section consists of preparing surfaces to receive special coatings. Field application of special coatings and subsequent touch-up, of interior and exterior items and surfaces, subsequent touch-up, of interior and exterior items and surfaces including the following: Coatings to interior railings (handrails and guardrails), and Coating to exterior exposed steel.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Courtaulds Coatings, Inc - International Paint and Porter Paint, Houston Texas, Carboline, Inc., St. Louis MO., Tnemec Company, Inc., Kansas City, MO., PPG, Pittsburgh Paints, Pittsburgh, PA.

Interior Metal, Ferrous (handrails and guardrails, exposed structural steel and metal fabrications not shop finished): Basis of Design - Tnemec Company Inc., Primer coat:

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Tnemec product "37H-78- Primer, Gray", at 2.0 to 3.0 mils DFT, First coat: Tnemec "Series 66 Color High-Build Epoxoline II" at 4.0 to 6.0 mils DFT, Second coat: Tnemec "Series 73 Endura Shield" at 2.0 to 3.0 mils DFT.

Exterior Metal, Ferrous (exposed steel and metal fabrications not shop finished): Basis of Design - Tnemec Company Inc., First coat: Series 90-97 Tnemec – Zinc, 3.0 – 3.5 mils, Second coat: Series 73 Endura – Shield, 4 – 5 mils, Third coat: Series 76 Endura – Clear 2 mils.

<b>DIVISION 10 – SPECIALTIES</b>
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**10 11 00**

**VISUAL DISPLAY SURFACES**

Furnish and install: Aluminum Framed Dry-Marker Boards, Tackboards and Tack Strips at Corridors. Manufacturers offering products which may be incorporated in the work include the following, Claridge Products & Equipment Inc., Harrison AK, AARC, Yaphank, NY., Aywon, Hazelton, PA., Newline, Plano, TX.

Marker Boards: Shall be porcelain enamel type, composed of 24 gauge steel facing sheet with 3 coat fired-on marker surface, standard colors as selected by Architect, with porcelain enamel backer coat, laminated to a 3/8 in thick plywood or particle board core and balanced with backing sheet of 0.0005 in aluminum foil. At Music Rooms, marker boards shall have musical staves neatly applied in a contrasting color and fired-on, size and layout as directed or approved by Architect.

Tackboards; Shall be composed of fabric-faced 7/32 in thick cork (Claridge No 3100), bonded to 1/4 in exterior grade plywood, for a total thickness of 1 in. Edges and mullions shall be finished in manufacturer's standard extruded aluminum trim, equal to 'Claridge Series 3'. Include extruded aluminum chalk tray where indicated. All aluminum shall be given clear satin anodized factory finish to match color of chalkboard face. Provide continuous Tackstrips in Classroom corridors as indicated on the Drawings. Tack-strips shall be as manufactured by Advantus or equal and shall be 2" H Low profile Cork Strip Map Rail with Mounting Hardware.

**10 12 00**

**DISPLAY CASES**

Furnish and install recessed display cases and bulletin board cabinets where indicated on Drawings. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Claridge Products and Equipment, Inc., ABC Bulletin & Directory Division of Nelson Harkins., Greensteel, Inc., Poblocki & Sons, Inc.

Recessed Display cases with glass shelving, tackable back and lighting. Drawings and specifications have been based on Claridge Products and Equipment, Inc., recessed display case Series 370 with sliding glass doors recessed mounted, having the following features: Frame: extruded aluminum with 2-1/2 inch width exposed face having beveled edges. Shelving: 10 inch deep fully tempered 1/4 inch thick glass shelving. Glazing: 3/16 inch thick tempered glass, clear, tempered safety glass complying with FS DD-G-1403, Kind FT, Condition A, Type I, Class 1 - transparent. Backboard: Designers Series tackable panels: 100 percent polyester panel fabric, stain and soil resistant, with a flame spread rating of Class A (ASTM E 84), laminated to 7/32" thick cork sheet on 1/4" thick hardboard backing with edges wrapped; color and texture as selected. Lighting: Provide



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manufacturer's fluorescent lighting, with regular T-12 fluorescent lamps, and manufacturer's standard reflector.

Surface Mounted Bulletin Boards as identified and located on the Drawings. Make and Model: Claridge Products and Equipment, Inc. "Contemporary Series Bulletin Boards without Header Panel" or equal as approved by Architect and having the following features:

**10 14 20**  
**SIGNAGE**

Furnish and install informational and directional signage, dedication plaques, Die Cast Letters for Interior and Exterior Applications as shown on the Drawings, Cast Aluminum Plaque with Logo, Exterior Pylon Signs at Main Entrances (x2) Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal: Interior acrylic signs - ASI Sign Systems Inc, New York, NY., Best Manufacturing Sign Systems, Montrose Co., DGS Corporation Chicago IL., Lynn Sign Company, Merrimac, MA., Nelson-Harkins, Chicago IL., Signs O'Life, Boston MA., Design-Tex, a Steelcase Company, Boston, MA. □ Interior Room Number Sign: Upper and lower case letters shall be two color, low-glare, self-extinguishing, laminated plastic on phenolic core, nominal 6. by 6 in., and 6 by 8 in. sizes as indicated on Drawings, with round corners and borders, for surface application by means of silastic adhesive mounting, stock word and picture signs, equal to Best Manufacturing Sign Systems. "N° HC300A and N° HC300B", Apco, ASI Sign Systems, Charleston Industries, Inc., as approved by Architect. One Type 1 Sign shall be provided at each door other than stair and toilet room doors, doors to coat closets, connecting doors between classrooms, connecting doors between group bathrooms, cross-corridor doors, and doors to the exterior. □ Directional Signage: Upper and lower case letters shall be two color, lo-glare, self-extinguishing, laminated plastic on phenolic core, 8 inches high by 18 inches long, with round corners and raised frame, for surface application by means of silastic adhesive mounting, stock word and picture signs, equal to Best Manufacturing Sign Systems. "N° HC300A and N° HC300B", Apco, ASI Sign Systems, Charleston Industries, Inc., or equal approved by Architect. □ Dedication Plaque: Provide a bronze plaque, 30 inches wide by 30 inches high. Framed satin finish polished bronze plaques with black paint filled engraved lettering and graphics. Equal to ARK Ramos, Architectural signage systems, Oklahoma, OK, model I-97 with BR500 finish. □ Cast Aluminum Plaque with Logo – Exterior Cast Aluminum Plaque equal to ARK Ramos D-07 in the size and shape shown on the Drawings. □ Interior Lettering for Gymnasium School Lettering and Logo shall be 12" high cast aluminum letters with satin face and matte edge, A.R.K. Ramos, Leeds Aluminum Letters Inc., Mills or equal as approved by the Architect. □ Exterior building Lettering: shall be 18" high cast aluminum letters with satin face and matte edge, A.R.K. Ramos, Leeds Aluminum Letters Inc., Mills or equal as approved by the Architect.

**10 21 13**  
**TOILET AND DRESSING COMPARTMENTS**

Furnish and install water and fire resistant solid phenolic partitions and screens. Provide products by one of the following manufacturers: Bobrick Washroom Equipment, Inc., Clifton Park, NY., General Partitions Mfg Corp., Erie, PA., Global Partitions, Eastanollee, GA. □ Toilet Compartments shall be Overhead-Braced, equivalent to Bobrick "1182.67

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Duraline Series". □ Urinal Screens shall be Post-to-Ceiling Screen equivalent to Bobrick "1183.67 Duraline Series". Solid phenolic material constructed of solidly fused plastic laminate with matte finish melamine surfaces, colored face sheets, and black phenolic-resin core that are integrally bonded. Edges shall be black. Brown edges shall not be acceptable. Color and pattern as selected by architect from manufacturer's full range of standard colors. Stiles and doors shall be 3/4" (19 mm). Panels and benches shall be 1/2" (13 mm). All hardware to be 18-8, type-304 stainless steel with satin finish. All hardware shall be concealed inside compartments with the exception of outswinging doors. Hardware of chrome-plated "Zamac" is unacceptable. All doors shall be equipped with self-closing continuous piano hinge

**10 21 23**  
**CUBICLE AND WALK-DRAW CURTAINS**

Furnish and install the following: Suspended cubicle curtains, suspension track, guides and accessories at Health 132-M. Provide separate cubicle curtains (x3) in L configuration around each of the resting cots as shown on the floor plans.

Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Cooper Industries, Kirsh Division, Stugis MI., General Cubicle Co. Telford, PA, Imperial Fastener Company, Pompano Beach, FL., Lansbrie Corp., Watrous Division, Northbrook IL., Salsbury Industries, Los Angeles CA.

CUBICLE TRACK AND CURTAINS - Track: Manufacturer's model (or equal): General Cubicle, model N°. 1062N, Cooper Industries, Kirsh model N°. 7918. Track shall be extruded aluminum having over-all dimensions of 1-3/8" x 3/4" x 0.062 inch minimum wall thickness. . Design for surface application with side projections to overcome ceiling irregularities and affording a method for scribing a tight, neat line to the ceiling.. Track bends with minimum 12 inch radius, without deforming track section, or impeding movement of carriers. Fabricate in one continuous "L" shape where ever practical. Suspension rods: Tubular aluminum sections, sized to support specified design loads and designed to receive attachment from track and either above ceiling or ceiling support as field conditions require. Curtain: Maharam Pattern, Progression #511445, Color, 002 Spring, 62% Trevira FR Polyester, , 38% Post – Consumer Recycled Polyester, 72" Wide, or approved pattern and color equal. Maharam Rep Contact information: Amanda Officer 1-800645-3943

WALK-DRAW CURTAIN AND TRACK - Track: Furnish and install "U"-shaped track Kirsch heavy-duty No. 9050 with No. 9056 ball bearing carriers, spaced 12" O.C. Track shall be hung from battens, as shown on the drawings. Pipe battens shall be dead hung to structural steel with C&P clamps figure #14 (1/2" size), and to have 2/0 lion chain with 3/8" bolts and washers. Pipe battens shall be provided with all necessary chains for tying to structural steel. Track shall be mounted flush to suspended ceiling and secured to pipe battens above suspended ceiling. Curtain: Furnish and install 36'-0" of Duvetyne or Atlas backdrop curtain-box pleated on 12" centers with bottom hems to contain jack chain weights. Provide curtain with 75% additional material for fullness. All curtains shall meet local and state code regulations.

**10 26 13**  
**WALL AND CORNER GUARDS**

Provide labor, materials and equipment necessary to complete wall and corner guard work as indicated on the Drawings. Work shall include, but not be limited to, the

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following: Corner guards at all exterior corners in corridors, lobbies. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Koroseal Wall Protection System, Construction Specialties, Inc., Arden Architectural Specialties, Inc. Corner guards shall be 16 gage stainless steel (type 304) complying with ASTM A 666, satin finish, mounted with concealed secure fasteners.

**10 28 13**

**TOILET ACCESSORIES**

Furnish and install toilet, bath and custodial accessories. Furnish toilet and bath accessory templates, to locate anchorage reinforcement, to trades responsible. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: American Specialties, Inc., Yonkers NY., Bobrick Washroom Equipment, Inc., Clifton Park NY., General Accessory Manufacturing Co. (GAMCO), Durant OK., World Dryer Corporation, Berkely IL. MATERIALS: Sheet steel: Cold rolled, commercial quality, ANSI/ASTM A 366. 0.0359-inch (0.9mm) min. nominal thickness, unless otherwise indicated. Stainless steel sheet: ASTM A 167, Type 302/304 with no 4 finish (satin) in 0.0312- in (0.8mm) min nominal thickness, unless otherwise indicated. Tubing: ASTM A 269 stainless steel. Chromium Plating – ASTM B 456, Service Condition # SC 2 (moderate service), Nickel plus chromium electrodeposited on base metal. Accessories include: Coat Hook (CH1 and CH2): Equal to ASI model 7340  
□ Grab Bars: Bobrick series: B-6806, "Swing-Up" grab bars with 29" length equal to Bobrick: B-4998.99 and Bobrick series: B-6806, or equal by ASI or Gamco. □ Framed Mirror (M1, M2 and M3): of sizes and mounting height as scheduled on Drawings, equal to Bobrick model B-1659 □ Soap Dispenser (SD1 and SD2): Furnished by Owner (to be installed by Contractor) □ Sanitary Napkin Disposal (SND1 and SND2): equal to Bobrick model B-270 □ Toilet Tissue Dispenser (TT1 and TT2): Furnished by Owner (to be installed by Contractor) □ Paper towel Dispenser (TW1 and TW2): Furnished by Owner (to be installed by Contractor) □ Mop and Broom Holder (MH): provide one at each Janitor's Closets. Equal to Bobrick model B-223-36. □ Electrical Hand Dryer (ED): □ Basis of Design: Bobrick B-7120 TrimLine Surface-Mounted, Stainless Steel ADA Dryer.

**10 41 16**

**EMERGENCY KEY CABINETS**

Furnish and install recessed mounted exterior emergency key cabinets equivalent to Rapid Entry System "Hinged Door Series 3200 Knox-Box" as manufactured by Knox Co., Phoenix, AZ, on exterior walls adjacent to the front entrances as directed by local Fire Department. Exterior emergency key cabinets shall be approximately 4"H x 5" W x 3-3/4" D capable of holding up to 10 keys and access cards in interior compartment, fabricated of heavy duty drill-resistant 1/4" solid steel housing 100% welded construction.

**10 44 00**

**FIRE PROTECTION SPECIALTIES**

Furnish and install: Fire extinguisher cabinets and brackets, Fire extinguishers, Fire department access emergency key cabinets. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: J.L. Industries, Bloomington MN., Larson Manufacturing Co., Minneapolis MN., Potter-Roemer, Union NJ.



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Fire extinguisher cabinet (FEC) trim style: Square trim, semi-recessed cabinet. Door and trim: Cold-rolled steel with factory applied white thermally fused polyester coating, acceptable to receive a field applied recoating. Vertical duo design with safety glazing. Vigilante alarm: Provide 9 volt, battery operated (battery included), plunger activated. vigilante alarm. Handles: Red door handles having raised letters "FIRE". Handle of cabinet shall be mounted at 48" above finished floor at locations allowing front approach and 54" above finished floor at locations limited to side approach. Cabinet construction: 18 gage cold-rolled steel with factory applied white baked acrylic enamel finish. Acceptable models: JL Industries "Ambassador Series", model number 1017, or equal.

Extinguishers: Multi-purpose dry chemical type (mono ammonium phosphate), 10 pound capacity, multi-purpose rated '4A, 60B:C'; with metal valves and siphon tubes, replaceable molded valve stem seals, pressure gauges and hose discharge.

<b>DIVISION 11 – EQUIPMENT</b>
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**11 06 20**  
**PLATFORM CURTAINS**

CURTAINS: Front-setting curtains including front curtain and valance; side curtain, scrim, and backdrop; and all hardware including medium duty curtain track system, battens and manually operated traversing hardware; and cables, s-hooks, pipe clamps, and other assorted hardware required for installation.

**11 13 00**  
**LOADING DOCK EQUIPMENT**

Furnish and install: 40'-0" of extruded rubber bumpers for loading dock – locations to be determined by the Architect. Provide products by one of the following manufacturers: Bondor Manufacturing Company, Providence, RI., Beacon Industries, Inc. St. Louis, MO., Durable Corporation, Norwalk OH. Basis of Design: "D6" as manufactured by Bonder Manufacturing Company, Providence, RI.

Extruded Dock Bumpers: Pre-drilled solid rubber for medium and heavy-duty protection. Provide steel mounting bar as required. All bumpers shall have an impact resistance (ASTM 2632) of 75% with a durometer reading of 70 plus or minus 5.

**11 40 00**  
**FOOD SERVICE EQUIPMENT**

Commercial food service equipment at cafeteria kitchen and server including cashier's station, milk cabinet, hot- and cold- food serving counters, work tables, carts, racks, shelves, steamer, microwave oven, range, exhaust hood with fire suppression system, cooler, freezer, and equipment including mixer, slicer, and the like, all installed at locations shown by Drawings and ready for use by the Owner (by food service equipment consultant).

**11 48 40**  
**BASKETBALL BACKSTOPS**

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Furnish basketball backstops listed in this Specification and/or shown on the Drawings. Forward Fold Main Court Backboards - Make & Model: Porter #950 as described herein with rectangular glass backboard #208, pressure release goal, safety-edge padding, electric operator with remote-control operation and "Saf-T-Strap" #797. Backstops shall be suspended from building steel and provided complete with all necessary attaching hardware, full-drop cradle, crossbracing, and fittings to provide a rigid, vibration-free installation. All goals with backboards shall be adjustable in height from 8'-0" to 10'-0" above the finished floor. Power: 3/4 H.P., 120V/60C/1 phase, direct connection.

Side Fold Side Court Backboards - Make & Model: Porter #955 as described herein with rectangular wood backboard #229, pressure release goal, safety-edge padding, electric operator with remote-control operation, and safety-strap #797. Backstops shall be suspended from building steel and provided complete with all necessary attaching hardware, full-drop cradle as required, crossbracing, and fittings to provide a rigid, vibration-free installation. All goals with backboards shall be adjustable in height from 8'-0" to 10'-0" above the finished floor. Power: 3/4 H.P., 120V/60C/1 phase, direct connection.

**11 48 60**  
**GYM CURTAIN**

Furnish roll-up curtain equal to Porter Model #670 and as shown on the Drawings. Lower 8'-0" section of curtain shall be polyester reinforced solid vinyl fabric 19 oz. per square yard and contains anti-bacterial and fungi-resistant treatment to prevent mildew and rot. All seams, outer edge hems and bottom pocket containing 2/0 coil proof chain shall be electronically welded with 1" full contact weld. Material shall conform to all State and Local Fire Code Regulations. All hems and pockets on curtain shall be double needle lock stitched seams. Upper section of curtain shall be VCP mesh; woven vinyl encapsulated polyester yarns with an 80% plus open grid weave for air circulation.

Curtain to be hoisted by 1/8" diameter steel aircraft cable. Electrical operation of the drive shaft shall consist of a compensating type power unit with a 3/4" H.P., 115 volt, single phase reversible motor with built-in thermal overload protection. Winch: Winch shall be 1500 pound capacity specifically designed for roll-up dividing curtains.

**11 49 40**  
**GYMNASIUM WALL PADDING**

Furnish and install wall padding and accessories as indicated on Drawings and/or as specified in this Section. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Porter Athletic, Inc., Jaypro. Fire-Retardant Wall Padding: Porter Model No. 00570-1XX HiNRG FR-SAFPAD. with wall Attachment Clips:

**11 52 13**  
**PROJECTION SCREENS**

Furnish and install the following: Electrically operated projection screens at locations shown on Drawings and/or specified herein. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Da-Lite Screen Company, Inc., Draper Shade and Screen Company, Inc. Bretford Manufacturing Inc., Stewart Filmscreen Corporation, To establish a standard of quality and performance,

Specifications are based on products by Da-Lite Screen Company, Inc. Manufacturers offering equal or greater products will be considered for incorporation in the work. □  
Gymnasium Platform (Quantity-1): Electrically operated , Ceiling recessed / rear projection equal to Da-Lite Model 37049L– Da-Lite Tensioned Large Advantage Electrol. Screen Size: Viewing Area: Height 146 inches x Width 260 inches (298” Diagonally) □  
Cafeteria (Quantity –1): Ceiling Recessed, front projection equal to Da-Lite Model #39158L, Tensioned Contour Electrol. Screen Size: Viewing Area: Height 92 inches x Width 164 inches.

**11 60 00**  
**FIXED CASEWORK AND EQUIPMENT**

Provide Base Cabinets, Wall Cabinets and Countertops at locations and as detailed on the Drawings. Include delivery to the building, unpacking, setting in place, leveling and scribing panels to walls, soffits, and floors as required. Coordinate sink installation and proper counter cut-outs with Plumbing trades for installation of sinks in Casework Assemblies. In general, all cabinets and cases shall be completely framed with a top and bottom four-sided horizontal structural frame blind mortised and tenoned into sides and front framing. All cabinets shall be self-supporting, modular units to permit efficient handling and possible rearrangement in the future. The casework shall be square, flush overlap construction with maple wood veneer faced door and drawer fronts. All casework component construction provided under this Section shall be equal to, or exceed, the construction specified herein as manufactured by the following companies and provided to the specific referenced projects listed: Wood-Metal Industries, Inc., Fisher Hamilton Scientific, ALC/Collegedale, CIF Lab Solutions. □ Countertops shall be 1-1/4" thick with 4" high backsplash, unless otherwise indicated, and of material and construction the same or equal to that specified below. Laboratory tops shall be in as large pieces as possible, complete with drip grooves machined into underside of perimeter edges. Plastic laminated tops shall be factory fabricated of best grade 0.05" thick, horizontal grade, high-pressure plastic laminate equal to Formica, Nevamar, or Wilsonart sheets bonded with semi-rigid (PVAC) contact adhesive, or rigid (ureas, recorcinol) adhesives to 45 pound density particleboard core. □ Provide all necessary Hardware and Trim including but not limoiyed to Drawer and Door Pulls, Hinges, Locks Magnetic Latches, Catches, Drawer Slides, Leg Shoes, Base Molding, Glides, Shelf Standards, Tote Trays, Rectangular Wire Management Grommets, Casters.

<b>DIVISION 12 – FURNISHINGS</b>
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**12 24 13**  
**WINDOW SHADES**

Furnish and install chain driven, manually operated roller-screen system with vinyl-coated glass fiber fabric for interior shading, including all supplementary items required for shade installation. Provide shades at all exterior windows, curtain walls and storefronts, except as otherwise specified herein below, refer to plans, interior and exterior elevations for sizes and shapes required. Verify all opening locations, sizes and shapes in field before fabrication. Shades are not required at the following locations: Gymnasium, Storage Rooms, All corridors, stairs and vestibules. Provide electrically operated room darkening/ blackout shades at certain windows including motor operator, controls and mounting hardware. Manufacturers offering products which may be incorporated in the work include, but are not limited to, the following: Mecho Shade, Long Island City, NY., Draper Shade and Screen, Inc., Spiceland, IN., Phifer Wire Products, Tuscaloosa, AL., Walker Specialties Inc, Boston Ma



**12 48 26**  
**ENTRANCE TILE**

Furnish and install polypropylene fibered modular matting tile entrance systems with all pertinent accessories as indicated on Drawings and/or as specified in this Section. Manufacturers offering products which may be incorporated in the work include the following:

“Liason Entryway System” by Mannington Commercial, “First Step” by Lees. The Basis of Design: “Recoarse II” as manufactured by Mannington Commercial. Color: Traverse Tan #8413, Construction: Textured Pattern Loop, Face Fiber: Type 6.6 nylon. Primary Backing 100% Synthetic, Secondary Backing Infinity RE Modular reinforced composite closed cell polymer with recycled content, Tile size: 24" x 24 "Modular Tile”.

**12 48 43**  
**FOOT GRILLES**

Recessed linked tread floor mats with aluminum transition strip/frame where as indicated on Drawings as “FOOT GRILLS”. Furnish and install surface mounted linked tread roll-up floor mats with aluminum transition strip/frame where as indicated on Drawings as “Foot Grille”. Manufacturers offering products which may be incorporated in the work include the following, or approved equal: Mats Inc. Stoughton Ma., Space-Links Inc Youngstown, Ohio, HiLine Inc. Minneapolis, Minnesota. Acceptable products: Mats Inc “Ultra Entry”, Space-Links Inc “Design Links 1, HiLine Inc. “Ultra Entry” Vinyl Foot Grille: Constructed from 30 percent post-industrial recycled polyvinyl chloride (PVC) if gray or other colors, and up to 100 percent post-industrial recycled PVC if black. Welded in a non-hinged, grille design with an embossed non-skid surface, (non-embossed surfaces not acceptable) to sizes indicated with the following characteristics: Ultra Entry: Extruded PVC Grid, gray color, with polyamide nylon 6.6 fiber insert in charcoal color.

**12 71 00**  
**TELESCOPING BLEACHERS**

Furnish electrically-operated gymnasium telescoping bleachers as shown on the Drawings. Include delivery to the building, unpacking, setting in place, leveling and attachment to structure, as required for complete installation. Provide specialty graphics as indicated on the Drawings.

<b>DIVISION 13 – SPECIAL CONSTRUCTION</b>
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Not Used.

<b>DIVISION 14 – CONVEYING SYSTEMS</b>
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**14 20 00**  
**ELECTRIC TRACTION ELEVATORS**

Section Includes: Electric Traction Elevators. Products Supplied But Not Installed Under this Section: Hoist Beam, Pit Ladder, Electrical work to provide power and telephone wiring from disconnect switch in equipment room to hoistways and elevators. Provide AC gearless machine room-less elevator systems subject to compliance with the design and performance requirements of this specification. Elevator manufacturers may include

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but are not limited to one of the following: Basis of Design: EcoSpace™ traction elevators by KONE, Inc. ([www.kone.com](http://www.kone.com)). Other acceptable machine room-less products: Otis Elevator Co. - Gen2™ Product or Schindler Elevator Corp. - 400A Product





**STRUCTURAL OUTLINE SPECIFICATIONS**

**SPECIFICATION ELEMENTS:**

- Project Description
- A - Substructure
- B - Shell
- C - Interiors
- D - Services
- E - Equipment and Furnishings
- F - Special Construction & Demolition
- G - Building Sitework
- Z - General

**PROJECT DESCRIPTION**

**A. SUBSTRUCTURE**

**A10: FOUNDATIONS**

**A1010 – Standard Foundations**

**A1010.10 Wall Foundations**

Description: Cast-In-Place concrete foundations walls supporting exterior wall construction and interior bearing-wall structure.

Based on the recommendations of the Geotechnical Engineer, the perimeter foundation walls would bear on continuous reinforced concrete strip footings extending at least 4 ft. – 0 in. below grade. The exterior foundation walls would be 14 to 16 in. thick, reinforced cast-in-place concrete walls, with brick shelf, on 12 in. thick by 36 in. wide continuous reinforced concrete strip footings around the perimeter of the building extending a minimum of 4 ft. – 0 in. below finished grade.

.Functional Requirements:

1. Performance Requirements:
  - a. 4500 psi compressive strength concrete.
  - b. Bottom of exterior footing to be minimum 4 ft. – 0 in. below grade.
2. Design Requirements:
  - a. Sustainability or LEED requirements:
    - (1) Recycled content shall not be less than 25% (flyash or slag).
    - (2) Regionally extracted and fabricated materials.

Components:

3. Concrete:
  - a. Portland cement
  - b. Aggregates
    - (1) Normal Weight Fine Aggregate: Shall be washed, inert, natural sand conforming to ASTM C33.
    - (2) Normal Weight Coarse Aggregate: Shall be well-graded crushed stone or washed gravel conforming to ASTM C33.
    - (3) Light Weight Fine and Coarse Aggregate: Shall conform to ASTM C330.
  - c. Potable water.

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- d. Admixtures:
  - (1) Water reducing Agent: ASTM C494, Type A.  
Water-reducing agent shall be by same manufacturer as air-entraining agent.
  - (2) Mid-Range Water Reducing Agent: ASTM C494, Type A
  - (3) High-Range Water Reducing Agent: ASTM C494, Type F or Type G.
  - (4) Air entraining agent: ASTM C260.
2. Reinforcement:
  - a. Reinforcing Steel Bars: Shall be newly rolled billet steel conforming to ASTM A 615 (Grade 60 unless noted). Bars shall be bent cold as required. Reinforcing bars being welded shall conform to ASTM A 706, Grade 60.
  - b. Welded Wire Fabric ASTM A 185: All welded wire fabric shall be supplied in sheets and is to be used in slabs on grade and on deck as noted.

### A1010.30 Column Foundations

Description: Based on the preliminary recommendations from the Geotechnical Engineer of the soil conditions on the proposed site the columns of the proposed structure would bear on reinforced concrete spread footings and the perimeter foundation walls would bear on continuous reinforced concrete strip footings extending at least 4 ft.- 0 in. below grade. With the assumed bearing capacity of the soil of 2 tons/sf, a typical interior footing would be 9 ft.- 0 in. x 9 ft.- 0 in. x 24 in. deep and the typical exterior footings would be 8 ft.- 0 in. x 8 ft.- 0 in. x 24 in. deep in the two story classroom wing. Typical exterior footings at the Vocational Shops and Gymnasium would be 8 ft.- 0 in. x 8 ft.- 0 in. x 24 in. deep. The footings supporting the columns that are part of the braced frames will be 10 ft.- 0 in. x 10 ft.- 0 in. x 24 in. deep. The exterior foundation walls would be 14 to 16 in. thick, reinforced cast-in-place concrete walls on 24 to 36 in. wide continuous reinforced concrete strip footings around the perimeter of the building extending a minimum of 4 ft.- 0 in. below finished grade. CMU shear walls will be on 24in wide by 12" thick continuous reinforced concrete strip footings.

Reinforced, Cast-in-Place concrete piers at column in perimeter walls would be 24 in. square, integral with foundation wall and projecting on the inside face.

#### Functional Requirements:

1. Performance Requirements:
  - a. 4500 psi compressive strength concrete.
  - b. Bottom of exterior footing to be minimum 4 ft. -0 in. below grade.
2. Design Requirements:
  - a. Sustainability or LEED requirements:
    - (1) Recycled content shall not be less than 25% (flyash or slag).
    - (2) Regionally extracted and fabricated materials.

#### Components:

3. Concrete:
  - a. Portland cement
  - b. Aggregates
    - (1) Normal Weight Fine Aggregate: Shall be washed, inert, natural sand conforming to ASTM C33.
    - (2) Normal Weight Coarse Aggregate: Shall be well-graded

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- crushed stone or washed gravel conforming to ASTM C33.
- (3) Light Weight Fine and Coarse Aggregate: Shall conform to ASTM C330.
- c. Potable water.
- d. Admixtures:
  - (1) Water reducing Agent: ASTM C494, Type A.  
Water-reducing agent shall be by same manufacturer as air-entraining agent.
  - (2) Mid-Range Water Reducing Agent: ASTM C494, Type A.
  - (3) High-Range Water Reducing Agent: ASTM C494, Type F or Type G.
  - (4) Air entraining agent: ASTM C260.
- 3. Reinforcement:
  - a. Reinforcing Steel Bars: Shall be newly rolled billet steel conforming to ASTM A 615 (Grade 60 unless noted). Bars shall be bent cold as required. Reinforcing bars being welded shall conform to ASTM A 706, Grade 60.
  - b. Welded Wire Fabric ASTM A 185: All welded wire fabric shall be supplied in sheets and is to be used in slabs on grade and on deck as noted.

### A1020 – Special Other Foundations

- Add spec text

### A1030 – Slabs on Grade

Description: Based on the recommendations from the Geotechnical Engineer, the typical lowest level of the proposed structure would be a 5 in. thick concrete slab-on-grade reinforced with welded wire fabric over a vapor barrier on 2 in. thick rigid insulation on 12in. of compacted sand gravel structural fill. The slab on grade will be 6" thick in all the shop areas and 8" thick at the automotive shop area. Interior non-structural masonry walls will bear on continuous 14" thickened slabs.

#### Functional Requirements:

- 4. Performance Requirements:
  - a. 4500 psi compressive strength concrete.
- 5. Design Requirements:
  - a. Sustainability or LEED requirements:
    - (1) Recycled content shall not be less than 25% (flyash or slag).
    - (2) Regionally extracted and fabricated materials.

#### Components:

- 6. Concrete:
  - a. Portland cement
  - b. Aggregates
    - (1) Normal Weight Fine Aggregate: Shall be washed, inert, natural sand conforming to ASTM C33.
    - (2) Normal Weight Coarse Aggregate: Shall be well-graded crushed stone or washed gravel conforming to ASTM C33.
    - (3) Light Weight Fine and Coarse Aggregate: Shall conform to ASTM C330.
  - c. Potable water.
  - d. Admixtures:
    - (1) Water reducing Agent: ASTM C494, Type A.



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Water-reducing agent shall be by same manufacturer as air-entraining agent.

- (2) Mid-Range Water Reducing Agent: ASTM C494, Type A
- (3) High-Range Water Reducing Agent: ASTM C494, Type F or Type G.
- (4) Air entraining agent: ASTM C260.

#### 4. Reinforcement:

- a. Reinforcing Steel Bars: Shall be newly rolled billet steel conforming to ASTM A 615 (Grade 60 unless noted). Bars shall be bent cold as required. Reinforcing bars being welded shall conform to ASTM A 706, Grade 60.
- b. Welded Wire Fabric ASTM A 185: All welded wire fabric shall be supplied in sheets and is to be used in slabs on grade as noted.

## B. SHELL

### B10: SUPERSTRUCTURE

#### B1010 – Floor Construction

##### B1010.10 Floor Structural Frame

Description: Typical structural framing is composed of wide flange steel beams, spaced at about 8 ft. on center, spanning between steel girders and columns. The weight of the structural steel framing the floors is estimated to be 15 psf. Spray applied fireproofing and intumescent coating required as per code analysis.

Beams: Wide flange structural steel members.

Columns: Columns would be hollow structural steel columns. Typical columns would be HSS 12 x 12 columns and the columns at the double story curtainwall in the Cafeteria would be HSS16 round columns. At mid height of the curtainwall in the Cafeteria a structural steel truss will be provided.

Lateral Load Resisting System: The typical lateral load resisting system for the other part of the school would be concentric steel braced frames comprised of hollow structural steel sections, and reinforced masonry shear walls.

#### Design Requirements:

Sustainability or LEED requirements:

Recycled content shall not be less than 80%.

Regionally extracted and fabricated materials.

#### Components:

All wide flange shapes shall be newly rolled steel conforming to ASTM A992,  $F_y = 50$  k.s.i. unless noted otherwise on drawings.

All bars, plates, channels, and angles shall conform to ASTM A36 unless otherwise indicated on the drawings.

Structural tubing shall conform to ASTM A500, Grade B with minimum yield strength  $F_y = 46$  KSI.

Structural pipe shall conform to ASTM A53, Grade B.

Anchor bolts shall conform to ASTM F1554 Grade 36 as noted or otherwise shown on the drawings.

High strength bolts ASTM A325 or ASTM A490 with ASTM A563, Grade A Hex style nuts, and compatible washers. Bolts shall be cold forged with rolled threads. Bolts with torque control snap-off ends may be used.

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Hot Dip Galvanizing shall conform to the latest ASTM specification as specified in Section 2.04 below.

Filler metal for welding shall conform to AISC Code, 2005 Edition, Section I.4.5.

Load-bearing and shear walls: 8 in. and 12 in. concrete masonry units, with steel bar reinforcement horizontally and vertically, grouted solid. Masonry units to ASTM C90; Type S high strength mortar; Coarse grout to ASTM C476, 3000 psi.

### B1010.20 Floor Decks, Slabs, and Toppings

Description: Typical floor slab is 5-1/4 in. total thickness light weight concrete on composite metal deck slab reinforced with welded wire fabric.

Performance Requirements: 4500 psi compressive strength concrete.

Sustainability or LEED requirements:

All deck is to consist of a minimum of 95 percent recycled steel with over 80 percent post-consumer and 15 percent pre-consumer recycled content.

For concrete, recycled content shall not be less than 25% (flyash or slag).

Regionally extracted and fabricated materials.

- Components:

Floor deck shall be composite wide rib 2 in. deep sheet carbon, galvanized conforming to ASTM A611 or A653 with a minimum yield point of 50,000 p.s.i. Deck shall be formed with deformations to provide a mechanical lock between concrete and steel.

Concrete:

- a. Portland cement
- b. Aggregates
  - (1) Normal Weight Fine Aggregate: Shall be washed, inert, natural sand conforming to ASTM C33.
  - (2) Normal Weight Coarse Aggregate: Shall be well-graded crushed stone or washed gravel conforming to ASTM C33.
  - (3) Light Weight Fine and Coarse Aggregate: Shall conform to ASTM C330.
- c. Potable water.
- d. Admixtures:
  - (1) Water reducing Agent: ASTM C494, Type A. Water-reducing agent shall be by same manufacturer as air-entraining agent.
  - (2) Mid-Range Water Reducing Agent: ASTM C494, Type A
  - (3) High-Range Water Reducing Agent: ASTM C494, Type F or Type G.
  - (4) Air entraining agent: ASTM C260.

Reinforcement:

- a. Reinforcing Steel Bars: Shall be newly rolled billet steel conforming to ASTM A 615 (Grade 60 unless noted). Bars shall be bent cold as required. Reinforcing bars being welded shall conform to ASTM A 706, Grade 60.
- b. Welded Wire Fabric ASTM A 185: All welded wire fabric shall be supplied in sheets and is to be used in slabs on

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deck as noted.

- B1010.90 Floor Construction Supplementary Components  
Fireproofing (Floor Deck does not require fireproofing, required 2hr fire rating achieved by deck/concrete system)  
Firestopping  
Expansion Control

**B1020 – Roof Construction**

**B1020.10 Roof Structural Frame**

**Description:**

Typical structural framing is composed of wide flange steel beams and steel joist spaced at about 8 ft. on center, spanning between steel girders, steel trusses and columns. The weight of the structural steel framing the floors is estimated to be 14 psf . Spray applied fireproofing and intumescent coating required as per code analysis.

Beams: Wide flange structural steel members.

Joists: DLH steel joists.

Steel Trusses: Built up with HSS tube sections.

Columns: Columns would be hollow structural steel columns. Typical columns would be HSS 12 x 12 columns and the columns at the double story curtainwall in the Cafeteria would be HSS16 round columns. At mid height of the

Lateral Load Resisting System: The typical lateral load resisting system for the school would be concentric steel braced frames comprised of hollow structural steel sections, and reinforced masonry shear walls.

**Functional Requirements:**

**Design Requirements:**

e. Sustainability or LEED requirements:

- (1) All steel is to consist of a minimum of 95 percent recycled steel with over 80 percent post-consumer and 15 percent pre-consumer recycled content.
- (2) Regionally extracted and fabricated materials.

**Components:**

All wide flange shapes shall be newly rolled steel conforming to ASTM A992, Fy = 50 k.s.i. unless noted otherwise on drawings.

All bars, plates, channels, and angles shall conform to ASTM A36 unless otherwise indicated on the drawings.

Structural tubing shall conform to ASTM A500, Grade B with minimum yield strength Fy = 46 KSI.

Structural pipe shall conform to ASTM A53, Grade B.

Anchor bolts shall conform to ASTM A307 or ASTM F1554 Fy = 105 k.s.i. as noted or otherwise shown on the drawings.

High strength bolts ASTM A325 or ASTM A490 with ASTM A563, Grade A Hex style nuts, and compatible washers. Bolts shall be cold forged with rolled threads. Bolts with torque control snap-off ends may be used.

Hot Dip Galvanizing shall conform to the latest ASTM specification as specified in Section 2.04 below.

Filler metal for welding shall conform to AISC Code, 2005 Edition, Section I.4.5.

Load-bearing and shear walls: 8 in. and 12 in. concrete masonry units, with steel bar reinforcement horizontally and vertically, grouted solid.

Masonry units to ASTM C90; Type S high strength mortar; Coarse grout to ASTM C476, 3000 psi.



**SOUTH SHORE VOCATIONAL TECHNICAL HS**  
HANOVER, MA

**B1020.20 Roof Decks, Slabs, and Sheathing**

**Description:**

The typical roof construction would be 3 in. deep Type N roof deck.  
Typical roof construction at the Gymnasium and Cafeteria/Main Street would be 3 in. deep Type NA acoustic roof deck.  
The typical roof construction at areas around rooftop units and at the green roof would be 7 in. concrete slab on composite deck as noted above for floor construction.

**Functional Requirements:**

**Design Requirements:**

- f. Sustainability or LEED requirements:
  - (1) All deck is to consist of a minimum of 95 percent recycled steel with over 80 percent post-consumer and 15 percent pre-consumer recycled content.
  - (2) Regionally extracted and fabricated materials.

**Components**

Type N roof deck, 3 in. deep, from steel sheet in accordance with ASTM A653, with a minimum yield strength of 33 psi, hot-dipped galvanized G60  
Type NA acoustic roof deck, 3 in. deep, from steel sheet in accordance with ASTM A653, with a minimum yield strength of 33 psi, hot-dipped galvanized G60. Perforated webs with acoustic batts that fit into ribs.  
Minimum noise reduction coefficient of 0.70.

**B1020.90 Roof Construction Supplementary Components**

Vapor Barrier

Insulation

Fireproofing, including underside of deck per UL P732

Firestopping

Expansion Control

- Add spec text

**C. INTERIORS**

**D. SERVICES**

**D20: PLUMBING**

**D2010 – Plumbing Fixtures**

- Add spec text

**D2020 – Domestic Water Distribution**

- Add spec text

**D2030 – Sanitary Waste**

- Add spec text

**D2040 – Rain-Water Drainage**

- Add spec text

**D2050 – Other Plumbing Systems**

- Add spec text

**D30: HEATING, VENTILATING AND AIR CONDITIONING**

**SOUTH SHORE VOCATIONAL TECHNICAL HS**  
HANOVER, MA

D3010 – Fuel Energy Supply Systems

- Add spec text

D3020 – Heat Generation Systems

- Add spec text

D3030 – Heat Rejection Systems Refrigeration

- Add spec text

D3040 – heat HVAC Distribution Systems

- Add spec text

D3050 – heat Transfer Terminal and Packaged Units

- Add spec text

D3060 – HVAC Instrumentation and Controls

- Add spec text

D3070 HVAC Systems Testing, Adjusting and Balancing

- Add spec text

D3090 – Other Special HVAC Systems and Equipment

- Add spec text

**D40: FIRE PROTECTION SYSTEMS**

D4010 – Fire Protection Sprinklers Systems

- Add spec text

D4020 – Standpipes and Hose Systems

- Add spec text

D4030 – Fire Protection Specialties

- Add spec text

D4090 – Other Fire Protection Systems

- Add spec text

**D50: ELECTRICAL SYSTEMS**

D5010 – Electrical Service and Distribution

- Add spec text

D5020 – Lighting and Branch Wiring

- Add spec text

D5030 – Communications and Security Systems

- Add spec text

D5040 – Special Electrical Systems

- Add spec text

D5050 – Electrical Controls and Instrumentation

- Add spec text

D5060 – Electrical Testing

- Add spec text

D5090 – Other Electrical Systems

**SOUTH SHORE VOCATIONAL TECHNICAL HS**  
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- Add spec text

**E. EQUIPMENT AND FURNISHINGS**

E10: EQUIPMENT

E1010 – Commercial Equipment

- Add spec text

E1090 – Other Equipment

- Add spec text

E20: FURNISHINGS

E2010 – Fixed Furnishings

- Add spec text

E2030 – Manufactured Casework

- Add spec text

**F. SPECIAL CONSTRUCTION AND DEMOLITION**

F20: SELECTIVE DEMOLITION

F2020 – Hazardous Components Abatement

- Add spec text

**G. BUILDING SITEWORK**

G10: SITE PREPARATION

G1010 – Site Clearing

- Add spec text

G1020 – Site Demolition and Relocation

- Add spec text

G1030 – Site Earthwork

- Add spec text

G1040 – Hazardous Waste Remediation

- Add spec text

G20: SITE IMPROVEMENTS

G2010 – Roadways

- Add spec text

G2020 – Parking Lots

- Add spec text

G2030 – Pedestrian Paving

- Add spec text

G2040 – Site Development

- Add spec text



**SOUTH SHORE VOCATIONAL TECHNICAL HS**  
HANOVER, MA

G2050 – Landscaping

- Add spec text

**G30: SITE CIVIL/MECHANICAL UTILITIES**

G3010 – Water Supply

- Add spec text

G3020 – Sanitary Sewer

- Add spec text

G3030 – Storm Sewer

- Add spec text

G3040 – Heating Distribution

- Add spec text

G3050 – Cooling Distribution

- Add spec text

G3060 – Fuel Distribution

- Add spec text

G3090 – Other Site Mechanical Utilities

- Add spec text

**G40: SITE ELECTRICAL UTILITIES**

G4010 – Electrical Distribution

- Add spec text

G4020 – Site Lighting

- Add spec text

G4030 – Site Communications and Security

- Add spec text

G4090 – Other Site Electrical Utilities

- Add spec text

**G90: OTHER SITE CONSTRUCTION**

G9010 – Service Tunnels

- Add spec text

G9090 – Other Site Systems

- Add spec text

**Z. GENERAL REQUIREMENTS**

END OF DOCUMENT



South Shore Regional Vocational Technical High School

Module 3 – Feasibility Study

3.3 – Preferred Schematic Report

Outline Specifications – New Construction

## **PLUMBING**

### **Scope of Work**

- Domestic water piping systems including cold water, hot water, and hot water recirculation.
- Domestic water heating plant including water heaters, storage tanks, thermostatic mixing valves, and hot water circulators.
- Backflow preventers and non-potable water piping systems.
- Storm and sanitary drain, waste, and vent systems.
- Natural gas piping system including emergency shut-off systems for kitchen, culinary arts kitchen, and laboratories.
- Grease drain, waste, and vent system with interior and exterior grease interceptors.
- Laboratory drain, waste, and vent system with chemical injection pH adjustment system.
- Elevator pit drainage system with sump pump and oil separator.
- Compressed air system including compressor(s), refrigerated air dryer(s), and piping.
- Shop floor and trench drainage systems with gas/oil/sand interceptors.
- Dental classroom systems including filtered water and medical vacuum and compressed air.
- Emergency eye wash and shower systems.
- Plumbing fixtures and associated accessories.

### **PLUMBING FIXTURES**

- Vitreous china wall hung toilets with manual flush valves.
- Vitreous china wall hung urinals with manual flush valves.
- Vitreous china wall hung lavatories with manual two-handle faucets.
- Stainless steel drop-in general use sinks with manual single lever faucets.



- Solid surface shower base and wall panels with pressure balancing shower valve and fixed shower head. Accessible showers will be equipped with hand held shower heads and slide bars.
- Molded stone mop service basin and wall mounted faucet with integral vacuum breaker.
- Refrigerated drinking fountains with bottle fillers.
- Emergency eye wash and shower stations with thermostatic mixing valves.

## **DOMESTIC WATER DISTRIBUTION**

### Water Supply Piping Systems

- Domestic water piping will be type “L” copper tube with press fittings.
- Valves will be low lead brass or bronze.
- Fixture stops will be quarter-turn chrome plated low lead brass valves.
- Wall hydrants will be key-operated freeze-proof self-draining type with integral vacuum breaker and bronze box and door
- Hose bibbs in restrooms shall be chrome plated key-operated type with integral vacuum breakers.
- Hose bibbs in shops and mechanical spaces will be rough bronze with metal wheel handles and integral vacuum breakers.

### Water Supply Equipment

- High efficiency, gas-fired, direct vent, tank type water heaters with ASME rated glass lined steel tanks.
- Electronically commutated, fractional horsepower, stainless steel, inline hot water recirculation pumps.
- Low lead brass thermostatic and pressure balancing type mixing valves
- Trap primers in restrooms will be pressure drop type.
- Trap primers in all other areas will be electronic type.
- Backflow preventers will be low lead brass of the reduced pressure principle type.

### Water Supply Insulation

- Insulation will be pre-molded fiberglass with all-service jacket and integral vapor barrier.

## **SANITARY WASTE**

### Waste and Vent Piping

- Above ground piping to be standard weight no-hub cast iron with heavy duty stainless steel couplings.
- Below ground piping to be service weight cast iron with hub and spigot joints with resilient gaskets.
- Piping 2" and smaller may be type "DWV" copper tube with drainage pattern fittings.

#### Waste Piping Specialties

- Floor drains to be epoxy coated cast iron with nickel bronze strainers.
- Trench drains to be of reinforced composite with traffic rated ductile iron grates.

#### Waste Piping Equipment

- Interior grease interceptors shall be epoxy coated steel with neoprene gasketed removable non-skid cover, removable baffles, lift out sediment bucket, and flow control fitting.
- Exterior grease interceptors shall be ¾" thick seamless, molded polyethylene with traffic rated covers.
- Exterior gas/oil/sand interceptors shall be precast concrete with traffic rated covers.
- Interior oil separator shall be seamless, molded polyethylene with gasketed, removable non-skid cover.
- Elevator sump pump shall be epoxy coated cast iron submersible type with discharge check valve, level sensor, and control panel.

### **RAIN WATER DRAINAGE**

#### Rain Water Drainage Piping Systems

- Above ground piping to be standard weight no-hub cast iron with heavy duty stainless steel couplings.
- Below ground piping to be service weight cast iron with hub and spigot joints with resilient gaskets.

#### Rain Water Drainage Specialties

- Roof drains to be epoxy coated cast iron with ductile iron dome strainers.
- Overflow roof drains to be epoxy coated cast iron with ductile iron dome strainers and perforated stainless steel downspout nozzles.
- Downspout boots to be epoxy coated cast iron.
- Area drains to be epoxy coated cast iron with ductile iron strainers and removable sediment baskets.

#### Rain Water Drainage Insulation

- Insulation will be pre-molded fiberglass with all-service jacket and integral vapor barrier.

### **OTHER PLUMBING SYSTEMS**

#### Compressed Air Systems

- Air compressors shall be tank mounted reciprocating piston type and shall be equipped with refrigerated dryers.
- Compressed air piping will be type "L" copper tube with press fittings.

#### Natural Gas Systems

- Natural gas piping 2" and smaller will be schedule 40 steel with malleable iron threaded fittings.
- Natural gas piping 2½" and larger is to be schedule 40 steel with welded fittings.
- Underground gas piping shall be polyethylene piping complying with ASTM Standard D 2513. Anodeless risers shall be installed where the pipe rises above grade and transitions to steel piping.
- Water heater combustion air piping shall be schedule 40 CPVC.
- Water heater gas vent piping shall be sealed, double wall, stainless steel factory built gas vent for category IV appliances.

#### Vacuum Systems

- Vacuum piping shall be type "L" copper tube with brazed wrought copper fittings.
- Vacuum pump shall be lubricated vane type with 1hp motor and suction tank with drain.

#### Acid Waste Systems

- Laboratory waste and vent piping shall be heat fused polypropylene.
- The neutralization system shall be the chemical injection type with containment/adjustment tank, tank mixer, acid and alkali tanks and injection pumps, and outlet recorder with alarm.

### **FIRE PROTECTION**

#### **Scope of Work**

- Private fire service main.
- System riser with backflow preventer, supervised zone valves, trim, and test and drain connections.
- Combination automatic sprinkler and manual standpipe system.
- Floor control valve assemblies.



- Fire department connections.
- Clean agent suppression systems.

## **SPRINKLERS**

### **WET-PIPE FIRE SPRINKLER SYSTEMS**

#### Private Fire Service Main

- Class 350 cement lined ductile iron with zinc outside coating and push-on "Tyton" joint. Joints between consecutive push-on pipe sections shall be restrained utilizing a boltless restraint joint system equal to US Pipe and Foundry Field Lok 350.
- Fittings shall be ductile iron MegaLug type restrained mechanical joint fittings.

#### Backflow Preventer

- Backflow preventers shall be UL listed and FM approved testable double check valve assemblies. Valves shall be iron body with replaceable seats and stainless steel internal parts.

#### Valves

- Gate valves shall be cast iron OS & Y with resilient seat.
- Butterfly valves shall be cast iron indicating type with stainless steel disc and stem.
- Drain valves shall bronze gate type with renewable composition disc.
- Check valves shall be cast iron swing type with stainless steel trim.
- The wet pipe system riser zone alarm check valves shall be swing check, cast iron body with stainless steel clapper. The valve shall include main drain valve and system and supply side pressure gauges with gauge cocks. The valve shall be provided with a complete trim package consisting of all necessary valves, gauges, and fittings for water, drain, test, and alarm connections

#### Sprinkler System Piping

- All piping 2" and smaller shall be Schedule 40 threaded black steel with malleable iron fittings.
- All piping 2½" and larger shall be Schedule 10 black steel pipe with rolled groove ends and grooved fittings and couplings.

#### Sprinklers

- Quick response, standard spray upright, pendent and sidewall sprinklers will be provided throughout the building.

- Concealed pendent sprinkler with flat cover plates will be installed in all areas with suspended ceilings.
- Sidewall sprinklers will be installed under overhead doors.
- Dry sprinklers will be installed in freezers, coolers, and the carpentry shop dust collection system.
- Special application combustible concealed space sprinklers will be installed within interstitial spaces of exposed combustible construction.

#### Fire Department Connection

- The fire department sprinkler connection shall be a cast brass two-way inlet body with drop clappers, furnished with protective brass caps with chains, and decorative brass back plate.
- The fire department standpipe connection shall be a cast brass four-way inlet body with drop clappers, furnished with protective brass caps with chains, and decorative brass back plate.

### STANDPIPES

#### FIRE PROTECTION STANDPIPE SYSTEM

##### Standpipe System Piping

- All piping 2" and smaller shall be Schedule 40 threaded black steel with malleable iron fittings.
- All piping 2½" and larger shall be Schedule 10 black steel pipe with rolled groove ends and grooved fittings and couplings.

##### Hose Valves

- Standpipe hose valves shall be 2½" polished chrome plated brass angle valve with removable 2½" chrome plated brass cap with chain.

### OTHER FIRE PROTECTION SYSTEMS

#### CLEAN AGENT FIRE EXTINGUISHING SYSTEMS

##### Clean Agent Suppression System

- Clean agent systems will include clean agent pilot and slave cylinders, actuators, piping, nozzles, automatic agent releasing panels, manual release pull stations, abort pushbuttons, and horn/strobe notification devices.
- The systems will be connected to the fire alarm system.
- All piping shall be Schedule 40 threaded black steel with malleable iron fittings.

South Shore Regional Vocational Technical High School

Module 3 – Feasibility Study

3.3 – Preferred Schematic Report

Outline Specifications – Renovation / Addition

## **PLUMBING**

### **Scope of Work**

- Domestic water piping systems including cold water, hot water, and hot water recirculation.
- Domestic water heating plant including water heaters, storage tanks, thermostatic mixing valves, and hot water circulators.
- Backflow preventers and non-potable water piping systems.
- Storm and sanitary drain, waste, and vent systems.
- Natural gas piping system including emergency shut-off systems for kitchen, culinary arts kitchen, and laboratories.
- Grease drain, waste, and vent system with interior and exterior grease interceptors.
- Laboratory drain, waste, and vent system with chemical injection pH adjustment system.
- Elevator pit drainage system with sump pump and oil separator.
- Compressed air system including compressor(s), refrigerated air dryer(s), and piping.
- Shop floor and trench drainage systems with gas/oil/sand interceptors.
- Dental classroom systems including filtered water and medical vacuum and compressed air.
- Emergency eye wash and shower systems.
- Plumbing fixtures and associated accessories.

### **PLUMBING FIXTURES**

- Vitreous china wall hung toilets with manual flush valves.
- Vitreous china wall hung urinals with manual flush valves.
- Vitreous china wall hung lavatories with manual two-handle faucets.
- Stainless steel drop-in general use sinks with manual single lever faucets.



- Solid surface shower base and wall panels with pressure balancing shower valve and fixed shower head. Accessible showers will be equipped with hand held shower heads and slide bars.
- Molded stone mop service basin and wall mounted faucet with integral vacuum breaker.
- Refrigerated drinking fountains with bottle fillers.
- Emergency eye wash and shower stations with thermostatic mixing valves.

## **DOMESTIC WATER DISTRIBUTION**

### Water Supply Piping Systems

- Domestic water piping will be type “L” copper tube with press fittings.
- Valves will be low lead brass or bronze.
- Fixture stops will be quarter-turn chrome plated low lead brass valves.
- Wall hydrants will be key-operated freeze-proof self-draining type with integral vacuum breaker and bronze box and door
- Hose bibbs in restrooms shall be chrome plated key-operated type with integral vacuum breakers.
- Hose bibbs in shops and mechanical spaces will be rough bronze with metal wheel handles and integral vacuum breakers.

### Water Supply Equipment

- High efficiency, gas-fired, direct vent, tank type water heaters with ASME rated glass lined steel tanks.
- Electronically commutated, fractional horsepower, stainless steel, inline hot water recirculation pumps.
- Low lead brass thermostatic and pressure balancing type mixing valves
- Trap primers in restrooms will be pressure drop type.
- Trap primers in all other areas will be electronic type.
- Backflow preventers will be low lead brass of the reduced pressure principle type.

### Water Supply Insulation

- Insulation will be pre-molded fiberglass with all-service jacket and integral vapor barrier.

## **SANITARY WASTE**

### Waste and Vent Piping

- Above ground piping to be standard weight no-hub cast iron with heavy duty stainless steel couplings.
- Below ground piping to be service weight cast iron with hub and spigot joints with resilient gaskets.
- Piping 2" and smaller may be type "DWV" copper tube with drainage pattern fittings.

#### Waste Piping Specialties

- Floor drains to be epoxy coated cast iron with nickel bronze strainers.
- Trench drains to be of reinforced composite with traffic rated ductile iron grates.

#### Waste Piping Equipment

- Interior grease interceptors shall be epoxy coated steel with neoprene gasketed removable non-skid cover, removable baffles, lift out sediment bucket, and flow control fitting.
- Exterior grease interceptors shall be ¾" thick seamless, molded polyethylene with traffic rated covers.
- Exterior gas/oil/sand interceptors shall be precast concrete with traffic rated covers.
- Interior oil separator shall be seamless, molded polyethylene with gasketed, removable non-skid cover.
- Elevator sump pump shall be epoxy coated cast iron submersible type with discharge check valve, level sensor, and control panel.

### **RAIN WATER DRAINAGE**

#### Rain Water Drainage Piping Systems

- Above ground piping to be standard weight no-hub cast iron with heavy duty stainless steel couplings.
- Below ground piping to be service weight cast iron with hub and spigot joints with resilient gaskets.

#### Rain Water Drainage Specialties

- Roof drains to be epoxy coated cast iron with ductile iron dome strainers.
- Overflow roof drains to be epoxy coated cast iron with ductile iron dome strainers and perforated stainless steel downspout nozzles.
- Downspout boots to be epoxy coated cast iron.
- Area drains to be epoxy coated cast iron with ductile iron strainers and removable sediment baskets.

#### Rain Water Drainage Insulation

- Insulation will be pre-molded fiberglass with all-service jacket and integral vapor barrier.

### **OTHER PLUMBING SYSTEMS**

#### Compressed Air Systems

- Air compressors shall be tank mounted reciprocating piston type and shall be equipped with refrigerated dryers.
- Compressed air piping will be type "L" copper tube with press fittings.

#### Natural Gas Systems

- Natural gas piping 2" and smaller will be schedule 40 steel with malleable iron threaded fittings.
- Natural gas piping 2½" and larger is to be schedule 40 steel with welded fittings.
- Underground gas piping shall be polyethylene piping complying with ASTM Standard D 2513. Anodeless risers shall be installed where the pipe rises above grade and transitions to steel piping.
- Water heater combustion air piping shall be schedule 40 CPVC.
- Water heater gas vent piping shall be sealed, double wall, stainless steel factory built gas vent for category IV appliances.

#### Vacuum Systems

- Vacuum piping shall be type "L" copper tube with brazed wrought copper fittings.
- Vacuum pump shall be lubricated vane type with 1hp motor and suction tank with drain.

#### Acid Waste Systems

- Laboratory waste and vent piping shall be heat fused polypropylene.
- The neutralization system shall be the chemical injection type with containment/adjustment tank, tank mixer, acid and alkali tanks and injection pumps, and outlet recorder with alarm.

### **FIRE PROTECTION**

#### **Scope of Work**

- Private fire service main.
- System riser with backflow preventer, supervised zone valves, trim, and test and drain connections.
- Automatic sprinkler system.
- Floor control valve assemblies.



- Fire department connections.
- Clean agent suppression systems.

## **SPRINKLERS**

### **WET-PIPE FIRE SPRINKLER SYSTEMS**

#### Private Fire Service Main

- Class 350 cement lined ductile iron with zinc outside coating and push-on "Tyton" joint. Joints between consecutive push-on pipe sections shall be restrained utilizing a boltless restraint joint system equal to US Pipe and Foundry Field Lok 350.
- Fittings shall be ductile iron MegaLug type restrained mechanical joint fittings.

#### Backflow Preventer

- Backflow preventers shall be UL listed and FM approved testable double check valve assemblies. Valves shall be iron body with replaceable seats and stainless steel internal parts.

#### Valves

- Gate valves shall be cast iron OS & Y with resilient seat.
- Butterfly valves shall be cast iron indicating type with stainless steel disc and stem.
- Drain valves shall bronze gate type with renewable composition disc.
- Check valves shall be cast iron swing type with stainless steel trim.
- The wet pipe system riser zone alarm check valves shall be swing check, cast iron body with stainless steel clapper. The valve shall include main drain valve and system and supply side pressure gauges with gauge cocks. The valve shall be provided with a complete trim package consisting of all necessary valves, gauges, and fittings for water, drain, test, and alarm connections

#### Sprinkler System Piping

- All piping 2" and smaller shall be Schedule 40 threaded black steel with malleable iron fittings.
- All piping 2½" and larger shall be Schedule 10 black steel pipe with rolled groove ends and grooved fittings and couplings.

#### Sprinklers

- Quick response, standard spray upright, pendent and sidewall sprinklers will be provided throughout the building.

- Concealed pendent sprinkler with flat cover plates will be installed in all areas with suspended ceilings.
- Sidewall sprinklers will be installed under overhead doors.
- Dry sprinklers will be installed in freezers, coolers, and the carpentry shop dust collection system.
- Special application combustible concealed space sprinklers will be installed within interstitial spaces of exposed combustibile construction.

#### Fire Department Connection

- The fire department sprinkler connection shall be a cast brass two-way inlet body with drop clappers, furnished with protective brass caps with chains, and decorative brass back plate.

### **OTHER FIRE PROTECTION SYSTEMS**

#### **CLEAN AGENT FIRE EXTINGUISHING SYSTEMS**

##### Clean Agent Suppression System

- Clean agent systems will include clean agent pilot and slave cylinders, actuators, piping, nozzles, automatic agent releasing panels, manual release pull stations, abort pushbuttons, and horn/strobe notification devices.
- The systems will be connected to the fire alarm system.
- All piping shall be Schedule 40 threaded black steel with malleable iron fittings.





## SERVICES

### D30: HEATING, VENTILATING AND AIR CONDITIONING

#### D3020 – Heat Generation Systems

##### D3020-101 – Heat Generation Systems

1. Boilers: High efficiency natural gas fired condensing hot water boilers. Power burners shall be fully modulating. Boiler shall have a minimum efficiency of 90% per DOE 10 CFR 431.86 testing procedures for commercial packaged boilers.
  - a. Manufacturer: Subject to compliance with the above, provide high efficiency gas fired condensing boiler of one of the following: Aerco, Cleaver Brooks, Viessmann or equal.
2. Pumps: Vertical inline fitted with high efficiency electric motors and factory mounted variable frequency drives.
  - a. Manufacturers: Subject to compliance with the contract documents provide pumps of the following manufacturer: Taco, Bell & Gossett, Armstrong, or equal.

##### D3020-102 – Heat System Supplementary Components

1. Radiant Ceiling Panels:
  - a. Classroom and office spaces will be provided with radiant ceiling panels located in the ceiling grid at the outside walls. The panels will run wall to wall and be 2 feet wide by Airtite or approved equal.
2. Piping and Fittings:
  - a. Hydronic piping shall be Schedule 40 ASTM A-53, black steel pipe with butt welded ends and fittings on 3" and above and threaded ends and fittings on 2-1/2" and smaller. At the contractor option type "L" copper may be used on all 2-1/2" and smaller. Also, grooved fittings (e.g. Victaulic) can be utilized for Schedule 40 steel piping.
3. Valves:
  - a. Valves shall be bronze, brass, or cast iron as system design requires.
  - b. Locate valves so as to isolate all parts of the system and as required for normal system operation.
  - c. Manufacturers: Subject to compliance with the requirements of the contract documents provide valves of the following manufacturer: Milwaukee, Stockham, Nibco, or equal.
4. Insulation:
  - a. All piping shall be insulated with snap-on fiberglass insulation with all service jacket. Fittings shall be insulated with snap on pre-molded covers with loose fill fiberglass insulation.
  - b. All HVAC supply and return ductwork shall be insulated with 2 inch thick fiberglass blanket (min. R-6 insulation) with a foil vapor barrier. All outside air intake ductwork shall be insulated with 2 inch (min. R-8 insulation) rigid fiberglass with foil vapor barrier.
5. System Identification:
  - a. Provide markers on all piping and equipment. Tag all valves in system with corresponding valve lists

D3030 – Cooling Systems

1. Heat Pump modular chiller:
  - a. Provides simultaneous heating and cooling similar to Trane Ascend or approved equal.
  - b. Provide a sound enclosure surrounding on all sides; consult the chiller manufacturer on the exact size and thickness of the enclosure to provide acceptable sound levels in the residential neighborhoods.
2. Pumps: Vertical inline fitted with high efficiency electric motors and factory mounted variable frequency drives.
  - a. Manufacturers: Subject to compliance with the contract documents provide pumps of the following manufacturer: Taco, Bell & Gossett, Armstrong, or equal.

D3040 – HVAC Distribution Systems

1. Classroom and Offices (RTU-1, RTU-2, RTU-3, RTU-4) (Option 1 – Displacement)
  - a. Provided roof top mounted air handling units (AHUs). AHUs shall be Performance Climate Changers by Trane or approved equal. The AHU will be provided with a hot water preheat coil, chilled water coil, hot water reheat coil, energy recovery wheel, 100% outside air economizer, MERV-8 prefilter and MERV-13 final filter. The outside air ventilation provided by the unit will be demand controlled (shall modulate to maintain the space CO2 setpoint), thereby reducing energy consumption. This air will be provided via air only (non fan powered) variable air volume (VAV) terminal units with hot water reheat coils.
  - b. In each classroom provide displacement ventilation diffusers similar to Price model DFE- 36x48x16 or approved equal. Each diffuser will have a 10" round duct connected to its inlet which will convey the air from the AHU.
  - c. Each office space will be served by one ceiling diffuser Price SMD or approved equal.
  - d. Each Science Classroom will be equipped with dedicated roof mounted lab exhaust, high plume discharge fans, Loren Cook Model TCNH-LE or approved equal.
  - e. Each Science Prep Room will be equipped with a dedicated roof mounted lab exhaust, high plume discharge fans, Loren Cook Model TCNH-LE or approved equal.
  - f. Each Kiln room will be equipped with inline exhaust fan, Loren Cook Model SQN Series or approved equal. Each kiln room will also be provided with a split ductless air conditioning unit for cooling, 2 tons capacity, Daikin or approved equal.
  - g. The mechanical room will be equipped with inline exhaust fan, Loren Cook Model SQN Series or approved equal.
  - h. The bathrooms and other spaces requiring general exhaust will be served by rooftop mounted, upblast fan, Loren Cook Model ACRU or approved equal.
2. Classroom and Offices (DOAS-1, DOAS-2,) (Option 2 – DOAS with VRF)
  - a. Provide roof top mounted dedicated outdoor air systems (DOAS) for the east and west classroom wings on the second floor. DOAS shall be Performance Climate Changers by Trane or approved equal. These DOAS unit will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilter and MERV-13 final filter.

- b. Each of the Classrooms, Offices and Teacher planning shall be heated and cooled by use of a Variable Refrigerant Flow (VRF) system comprised of concealed fan coil units suspended above the ceilings. This system will be capable of simultaneous heating and cooling. Each Fan Coil Unit will be controlled independently.
  - c. In general, each 2nd floor classroom shall receive (1) ducted style VRF unit located above the ceiling grid. Provide Daikin Model 'FXSQ' or approved equal.
  - d. In general, each offices shall receive (1) cassette style VRF unit located within the ceiling grid. Provide Daikin Model 'FXFQ' or approved equal.
  - e. Conference rooms, open plan offices and large corridors shall receive (1) ducted style VRF unit located above the ceiling grid. Provide Daikin Model 'FXSQ' or approved equal.
  - f. Provide air source heat recovery type condensing units roughly zoned in the same manner as the DOAS units serving the indoor FCU's. The condensing units shall be roof mounted on equipment rails to ensure the units are mounted above the snow line and shall be provided with snow/hail guards. Condensing units shall be Daikin VRV-IV/X Series or approved equal.
  - g. Each Science Classroom will be equipped with Dedicated roof mounted lab exhaust, high plume discharge fans, Loren Cook Model TCNH-LE or approved equal.
  - h. Each Science Prep Room will be equipped with a dedicated roof mounted lab exhaust, high plume discharge fans, Loren Cook Model TCNH-LE or approved equal.
  - i. Each Kiln room will be equipped with an inline exhaust fan, Loren Cook Model SQN Series or approved equal.
  - j. The mechanical room will be equipped with inline exhaust fan, Loren Cook Model SQN Series or approved equal.
3. Gym (RTU-5, RTU-6)
- a. Provide roof top mounted air handling units (AHUs) for the gym. AHUs shall be Performance Climate Changers by Trane or approved equal. It will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilter and MERV-13 final filter. The unit will also incorporate demand control ventilation which will modulate the amount of outside air to the space based on occupancy and CO2.
4. Auditorium (RTU-7)
- a. Provide roof top mounted air handling unit (AHU) for the Auditorium. AHU shall be Performance Climate Changers by Trane or approved equal. It will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilter and MERV-13 final filter. The unit will also incorporate demand control ventilation which will modulate the amount of outside air to the space based on occupancy and CO2.
5. Library, Media, Admin Suite (RTU-8) (Option 1 – Displacement)
- a. Provide roof top mounted air handling unit (AHU) for the Library, Media and Admin Suite. AHU shall be Performance Climate Changers by Trane or approved equal. It will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilter and MERV-13 final filter. The unit will also incorporate demand control ventilation which will modulate the amount of



outside air to the space based on occupancy and CO2. This air will be provided via air only (non-fan powered) variable air volume (VAV) terminal units with hot water reheat coils.

6. Library, Media, Admin (DOAS-5) (Option 2 – DOAS with VRF)
  - a. Provide roof top mounted dedicated outdoor air systems (DOAS) for the Library, Media and Admin Suite. DOAS shall be Performance Climate Changers by Trane or approved equal. Preconditioned outside ventilation air will be distributed through ductwork to each space. These DOAS unit will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilterer and MERV-13 final filter.
  - b. Each of the Offices, Teacher Planning, Media Rooms, and Library Stack shall be heated and cooled by use of a Variable Refrigerant Flow (VRF) system comprised of concealed fan coil units suspended above the ceilings. This system will be capable of simultaneous heating and cooling. Each Fan Coil Unit will be controlled independently.
    - i. In general, the media center and library shall receive ducted style VRF unit located above the ceiling grid. Provide Daikin Model 'FXSQ' or approved equal.
    - ii. In general, in the Admin/Office/ Nurse suite each office shall receive (1) cassette style VRF unit located within the ceiling grid. Provide Daikin Model 'FXFQ' or approved equal.
    - iii. Conference rooms, open plan offices and large exterior corridors shall receive (1) ducted style VRF unit located above the ceiling grid. Provide Daikin Model 'FXSQ' or approved equal.
  - c. Provide air source heat recovery type condensing units roughly zoned in the same manner as the DOAS units serving the indoor FCU's. The condensing units shall be roof mounted on equipment rails to ensure the units are mounted above the snow line and shall be provided with snow/hail guards. Provide Daikin VRV-IV/X Series or approved equal.
7. Commons (RTU-9)
  - a. Provide roof top mounted air handling unit (AHU) for the Commons. AHU shall be Performance Climate Changers by Trane or approved equal. It will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilterer and MERV-13 final filter. The unit will also incorporate demand control ventilation which will modulate the amount of outside air to the space based on occupancy and CO2.
8. Kitchen & Seryery
  - a. Kitchen exhaust hoods (Dishwasher & Grease) shall be designed and specified by the Kitchen Equipment Consultant. Grease exhaust hoods as required shall be installed per NFPA 96 with carbon steel ductwork and up-blast exhaust fans with ventilated curbs. Fan serving grease hood shall be variable speed by Loren Cook or approved equal. Dishwasher exhaust fan shall be by Loren Cook or approved equal.
9. Locker Rooms & Fitness (RTU-10)
  - a. Provide roof top mounted air handling unit (AHU) for the Locker Rooms and Fitness. AHU shall be Performance Climate Changers by Trane or approved equal. It will be provided with hot water preheat coil, chilled water coil, and hot water reheat coil, energy recover wheel, 100% outside air economizer, MERV-8 prefilterer and MERV-13 final filter. The unit will also incorporate

demand control ventilation which will modulate the amount of outside air to the space based on occupancy and CO2. This air will be provided via air only (non-fan powered) variable air volume (VAV) terminal units with hot water reheat coils.

10. Vocational (Shop) Spaces (ERV-1, ERV-2, ERV-3, ERV-4, ERV-5, ERV-6, ERV-7, ERV-8, ERV-9, ERV-10, ERV-11)

- a. Provide Energy Recovery Ventilators (ERVs) for each Vocational Space located indoors on the mezzanine above the vocational classroom for each Vocational space. ERVs shall be Performance Climate Changers by Trane or approved equal. The ERVs will be provided with hot water coil, plate type heat exchanger, 100% outside air economizer, MERV-8 prefilter and MERV-13 final filter. Ductwork at the inlet to the each unit shall incorporate return air and outside air motorized dampers to allow 100% outside air or partial return air / outside air operation. ERVs 1-7 will have heating and ventilation only.
- b. Electrical shop (ERV-7), Culinary Arts (ERV-8), Cosmetology (ERV-9), Vet School (ERV-11) ERV will have hot water preheat coil, chilled water coil and hot water reheat coil to provide a fully conditioned space.

11. Tel/Data and security equipment rooms

- a. Data closets will be served by ductless split units, by Daikin or approved equal. Unit consists of indoor wall mount ductless air handler and roof mount condensing unit with low ambient kit.

D3050 – Terminal and Packaged Units

1. Unit Heaters:

- a. Horizontal or cabinet type with exact locations to be determined. All units shall be provided with fan and aquastat control.
- b. Available Manufacturers: Subject to compliance with the requirements of the contract documents provide unit heaters of the following manufacturer: Rittling, Sterling, Trane, or equal

2. Fin Tube Radiation:

- a. Commercial slope top fin-tube with steel tube and steel fin. Cover shall be 14 ga. with baked enamel factory finish. All units shall be provided with full backplate, damper, end covers, and splice pieces for a complete installation.
- b. Available Manufacturers: Subject to compliance with the requirements of the contract documents provide fin-tube radiation of the following manufacturer: Sterling, Vulcan, Rittling, or equal

D3060 – HVAC Instrumentation and Controls

1. Automatic Temperature Controls:

- a. A Building Management System (BMS) shall be installed to control the mechanical and selected electrical systems. BMS shall be Alerton or approved equal and shall be connected back to campus head end.
- b. The BMS shall provide temperature control for all HVAC systems and control select lighting and plumbing in the new building.
- c. The system shall be programmed for occupied/unoccupied cycles for the air

handling equipment, with an override feature for spaces that would be utilized after-hours.

- d. The system shall monitor occupancy sensing devices to control the amount of outside air being brought in to assist in energy conservation.
- e. The BMS shall be accessible from any Web browser and remote desktop with proper authorization.
- f. Further definition of exact controls sequences implemented for owner convenience, occupant comfort and energy savings will be defined as design is progressed.

#### D3070 HVAC Systems Testing, Adjusting and Balancing

1. Requirements include measurement and establishment of the quantities of the mechanical systems as required to meet specifications, and recording and reporting the results. Test, adjust and balance the following mechanical systems:
  - a. Supply air systems.
  - b. Return air systems.
  - c. Exhaust air systems.
  - d. Outside air systems.
  - e. Hydronic heating and cooling systems.
  - f. Verify temperature control system operation.
2. Report forms shall be those standard forms prepared by the referenced standard for each respective item and system to be tested, adjusted, and balanced. Bind report forms complete with schematic systems diagrams and other data in reinforced, vinyl, three-ring binders.
3. An independent testing, adjusting, and balancing agency certified by the AABC or NEBB as a Test and Balance Engineer in those testing and balancing disciplines required for this project.

#### D3090 – Other Special HVAC Systems and Equipment

1. Ductwork:
  - a. All ductwork shall be galvanized steel with all seams sealed. Entire ductwork system shall be fabricated and installed per SMACNA Low Pressure Duct Construction Standards.
  - b. Grease exhaust hood ductwork shall be constructed of 16 gage carbon steel and the dishwasher shall be constructed of 18 gage stainless steel.
2. Diffusers:
  - a. All devices shall be steel construction with louvered face and baked enamel finish.
  - b. Manufacturers: Subject to compliance with the requirements of the contract documents provide displacement diffusers of the following manufacturer: Krueger, Price, Titus, or equal
3. Workmanship and Installation Methods:
  - a. All work shall be installed in a first-class manner consistent with the best current practices.
  - b. All piping shall be installed with slope for proper drainage shall be grouped together and be parallel to each other. Utilize gang hangers wherever feasible. Group all valves together where feasible.
4. Cleaning and Protection:
  - a. Protect all materials and equipment during shipment and installation, and properly handle and store at the job site so as to prevent damage, and upon



completion of this work, clean all fixtures and equipment and replace damaged parts.

5. Sleeves and Escutcheons:
  - a. Furnish and install in masonry walls and floors, galvanized steel sleeves as required. Provide escutcheons where sleeves and pipe penetrations are exposed to view.
6. Firestopping:
  - a. At all sleeved walls and floors provide firesafe caulking, packing, blanket, for a completely tight system to prevent the passage of smoke and fire.
  - b. Provide firestopping around mechanical penetrations in accordance with fire stopping requirements. System shall be capable of maintaining against flame and gases. System shall be UL listed and comply with ASTM E814.
7. Operation Manuals and Maintenance Manuals:
  - a. Refer to the contracts specifications for a complete outline of all requirements of operations and maintenance data.
8. Record Drawings and Control Documents.
9. All motors provided shall be high efficiency or better.
10. All ductwork and accessories shall meet SMACNA standards.
11. Air distribution shall be accomplished by using sheet metal duct for supply, return and exhaust ductwork, no plenum air will be allowed.
12. Provide all HVAC equipment with extra set of filters.
13. Seismic restraints shall be installed as required per State of Massachusetts Building Code and Fire Safety Code. This includes piping, ductwork, equipment, and equipment bases.
14. Provide mechanical identification for mechanical systems. Identification shall comply with ANSI A13.1.
15. All pipe connections shall be installed to allow for freedom of movement of the piping during expansion and contraction without springing. Swing joints, expansion loops and expansion joints with proper anchors and guides shall be provided by the Contractor where necessary and/or where shown.

#### D50: ELECTRICAL SYSTEMS

##### D5010 – ELECTRICAL SERVICE AND DISTRIBUTION

##### D5010-101 – ELECTRICAL SERVICE

1. See allowances section for back charges by utility company with respect to permanent service.
2. The project will consist of two electrical services, each sized at 2500A, 480/277V, 3 phase.
3. Provide all primary system raceways, elbows, pull wires, pad and all pad grounding. Utility company will provide pad mounted transformer and primary conductors including making up of all terminations and connections.
4. Provide secondary service complete including copper conductors, raceways and connectors.
5. Metering: One utility company provided meter will be included mounted to the transformer by the utility company.

##### D5010-102 – EMERGENCY POWER SYSTEM

1. Life safety and optional standby power will be provide by a 750kW, 480/277V, diesel fueled engine, NFPA 110 standby generator meeting EPA Tier 3 emissions regulations.
2. The generator will be will be located on a concrete pad on grade. The generator will be equipped with sound attenuating, vandal-resistant, weatherproof steel housing. Enclosure rating will be selected for minimum sound attenuation of 25 dB at 500 Hz. Sound level measured at a distance of 10 feet from the exhaust discharge after installation is complete will be 85 dBA or less.
3. The generator will be equipped with a double walled, sub-base fuel tank and will provide seventy two hours of fuel storage for continuous operation at 100 percent rated power output. Base-mounted fuel oil tank to be factory installed and piped, complying with NFPA 30 and UL 142. Fuel type to be diesel, Grade DF-2.
4. A load bank will be provided and sized for 50% of the total generator rating.
5. The generator will feed three Automatic Transfer Switches. One for Life Safety, two for optional standby.
6. Each ATS will serve a 480/277V distribution panelboard located in the main emergency room.
7. Emergency system panelboards will be provided with a surge protection device, and all emergency system overcurrent devices will be selectively coordinated, per a selective coordination study, with all supply-side overcurrent protective devices.
8. Emergency feeders will be in a 2 hour fire rated enclosure or fire rated cable assembly.

D5010-103 – TRANSFORMERS

1. General requirements for equipment under this section:
  - A. Manufacturers:
    1. Square D
    2. Siemens
    3. Eaton
    4. ABB
  - B. Enclosure (unless otherwise indicated on plans or schedules):
    1. Type 1 (indoor, dry locations)
    2. Type 3R (outdoor, wet locations)
2. Transformers
  - A. Product description: NEMA ST20, factory-assembled, air-cooled, energy star rated, dry-type transformer. Ratings shall be as indicated on drawings.
  - B. Efficiency: Comply with the latest department of energy efficiency standards for dry-type transformers
  - C. Insulation system and average winding temperature: Class 220 with 150°C rise.
  - D. Case temperature: Do not exceed 35 degrees C rise above ambient at warmest point at full load.
  - E. Winding taps: NEMA ST 20.
  - F. Coil conductors: Continuous copper or aluminum windings with terminations brazed or welded.
  - G. Neutral bus: Sized to accommodate twice the rated secondary current.
  - H. Enclosure: NEMA ST 20. Furnish lifting eyes or brackets.
  - I. Insulate core and coil from enclosure using vibration-absorbing mounts.
  - J. Nameplate: Include transformer connection data, ratings, wiring diagrams, and overload capacity based on rated winding temperature rise.
3. Transformer installation standards
  - A. Install transformers in accordance with NECA 409 and IECC C57.94.
  - B. Use flexible conduit, 2' minimum length, for connections to transformer case. Make conduit connections to side panel of enclosure.

- C. Arrange equipment to provide minimum clearances as specified on transformer nameplate and in accordance with NFPA 70.
- D. Mount wall-mounted transformers using integral flanges or accessory brackets furnished by the manufacturer.
- E. Mount floor-mounted transformers on properly sized 3" high concrete pad in accordance with division 03, as applicable. Provide with vibration isolators suitable for isolating transformer noise from building structure.
- F. Provide grounding and bonding in accordance with NFPA 70.
- G. Remove shipping braces and adjust bolts that attach the core and coil mounting bracket to the enclosure according to the manufacturer's recommendations in order to reduce audible noise transmission.
- H. Where not factory installed, install lugs sized as required for termination of conductors as shown on the drawings.
- I. Install a permanent label indicating the panelboard where the power supply to the transformer originates.

D5010-104 – SWITCHBOARDS

1. Switchboards

- A. Description: Dead-front switchboard assemblies complying with NEMA PB 2, and listed and labeled as complying with UL 891; ratings, configurations and features as indicated on the drawings.
- B. Listed and labeled as suitable for use as service equipment according to UL 869A.
- C. For solidly-grounded wye systems, provide factory-installed main bonding jumper between neutral and ground busses, and removable neutral disconnecting link for testing purposes.
- D. Comply with Utility Company requirements for electrical service.
- E. Utility Metering Provisions: Provide separate barriered compartment complying with Utility Company requirements where indicated or where required by Utility Company. Include hinged sealable door and provisions for Utility Company current transformers (CTs), potential transformers (PTs), or potential taps as required.
- F. Minimum integrated short circuit rating: 65KAIC.
- G. Bussing: Sized in accordance with UL 891 temperature rise requirements. Through bus (horizontal cross bus) to be fully rated through full length of switchboard (non-tapered). Tapered bus is not permitted. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection. Provide solidly bonded equipment ground bus through full length of switchboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor. Phase and Neutral Bus Material: Silver Plated Copper. Ground Bus Material: Silver Plated Copper.
- H. Molded case circuit breakers: NEMA AB 1, circuit breakers with integral thermal and instantaneous trip function, bolt-on type. Provide electronic trip circuit breakers where indicated.
- I. Provide circuit breakers with magnetic trip in each pole.
- J. Circuit breakers rated 1,000 amps or more on solidly grounded 480v systems shall include ground fault protection.
- K. Circuit breakers rated 1,200 amps or more shall have long time, short time, instantaneous, and ground fault protection (LSI) functions. Circuit breakers shall have energy reduction maintenance setting (ERMS) system.
- L. Enclosure: NEMA PB 1.
- M. Cabinet front: lockable hinged door, metal directory frame, finished in manufacturer's standard gray enamel.



- N. Provide each switchboard with phase failure relay, ground fault relay and internal power meter.

D5010-105 – PANELBOARDS

1. Panelboards

- A. Product description: NEMA PB 1, circuit breaker type panelboard, complying with UL 67.
- B. Panelboard bus: copper current carrying components, ratings as shown on drawings. Furnish copper ground bus in each panelboard.
- C. Minimum integrated short circuit rating: 10kaic.
- D. Molded case circuit breakers: NEMA AB 1, circuit breakers with integral thermal and instantaneous trip function, bolt-on type. Provide electronic trip circuit breakers where indicated.
- E. Provide circuit breakers with magnetic trip in each pole.
- F. Circuit breakers rated 1,000 amps or more on solidly grounded 480v systems shall include ground fault protection.
- G. Circuit breakers rated 1,200 amps or more shall have long time, short time, instantaneous, and ground fault protection (LSI) functions. Circuit breakers shall have energy reduction maintenance setting (ERMS) system.
- H. Enclosure: NEMA PB 1.
- I. Cabinet front: lockable hinged door, metal directory frame, finished in manufacturer's standard gray enamel.
- J. Provide each switchboard with phase failure relay, ground fault relay and internal power meter.

D5010-106 – PHOTOVOLTAIC SYSTEM

- 1. A photovoltaic system will be not be provided. Include (4)-4"C from the main electrical room to the roof level for a future photovoltaic system.

D5020 – LIGHTING AND BRANCH WIRING

D5020-101 – GENERAL PURPOSE WIRING AND DEVICES

1. Electrical power conductors and cables

A. Coordination:

- 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
- 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
- 3. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted or required.
- 4. Conductor sizes and ampacities shown are based on copper.

B. Minimum conductor sizes:

- 1. Branch circuits: 12 AWG
- 2. 20a, 120v circuits longer than 75 feet - 10 AWG minimum and sized for voltage drop.
- 3. 20a, 120v circuits longer than 150 feet- 8 AWG and sized for voltage drop.
- 4. 20a, 277v circuits longer than 150 feet - 10 AWG minimum and sized for voltage drop.
- 5. Control circuits: 14 AWG.

- C. Conductors no. 10 AWG and smaller diameter shall be solid annealed copper, except that conductors for remote control, alarm, and signal circuits, classes 1, 2, and 3, shall be stranded unless specifically indicated otherwise.

- D. Conductors no. 8 AWG and larger diameter shall be stranded annealed copper.
  - E. Unless specified or indicated otherwise or required by NFPA 70, power and lighting wires shall be 600-volt, type thwn/thhn or thwn/thwn-2 annealed copper, control and signal circuits shall be type tw, thw, or tf annealed copper. Underground conductors shall be type xhhw-2.
  - F. Where lighting fixtures require 90 degrees c conductors, provide only conductors with 90 degree c insulation or better.
  - G. Make all splices in accessible locations. Make splices in conductors no. 10 AWG and smaller diameter with insulated, spring wire connectors with plastic caps. Make splices in conductors no. 8 AWG and larger diameter with solderless pressure connectors with insulating covers. Make splices in conductors no. 6 and larger with pressure connectors or split bolt connectors.
  - H. Make wire terminations using crimped terminals for conductors no. 10 and smaller. Make wire terminations for conductors no. 8 and larger using mechanical or pressure connectors. Provide suitable reducers where oversized conductors are larger than the equipment termination.
  - I. Phase conductors shall be identified by color coding. The color of the insulation on phases a, b, and c respectively (for three phase) or phases a and b respectively (for single phase) of different voltage systems shall be as follows:
    - 1. 120/208 volt, three phase: black, red, and blue.
    - 2. 277/480 volt, three phase: brown, orange, and yellow.
    - 3. 120/240 volt, single phase: black and red.
  - J. Unless otherwise indicated, the wiring method shall consist of the installation of insulated conductors installed in electrical metallic and/or wiremold raceway.
  - K. Metallic-armored type mc cables, where allowed, shall include 600v insulation rating, type thhn/thwn-2 copper conductors, dedicated neutral conductor and steel interlocking armor. Uses permitted:
  - L. Where concealed above accessible ceilings for final connections to luminaires (maximum length 6 feet).
  - M. Where concealed in hollow stud walls, above accessible ceilings, and under raised floor for branch circuits up to 20a.
    - 1. Exception: provide single conductor building wiring in raceway for circuit homerun from first device in space to panelboard.
  - N. Provide insulated, green equipment grounding conductor in feeder and branch circuits, installed in conduit or raceways, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor.
2. Grounding
- A. Grounding shall be completed in accordance with NFPA 70. Ground exposed, non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and nonmetallic raceways, and neutral conductor of wiring systems. Where ground fault protection is employed, ensure that connection of ground and neutral does not interfere with correct operation of fault protection.
  - B. Existing work: where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
  - C. Where conductor size is not indicated, size to comply with NFPA 70.
  - D. Use insulated copper conductors unless otherwise indicated. Use bare copper conductors where installed underground or encased in concrete.

- E. Use listed mechanical connectors, compression connectors or exothermic welded connections for accessible connections. Use exothermic welded connections for underground, concealed or otherwise inaccessible connections.
  - F. Grounding electrode system: provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system. Provide continuous grounding electrode conductors without splice or joint. Install grounding electrode conductors in raceway where exposed or subject to physical damage. Bond grounding electrode conductor to metallic raceway at each end with bonding jumper.
  - G. Service-supplied system grounding: for each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure
  - H. Separately derived system grounding: provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Provide system bonding jumper to connect system grounded conductor to equipment grounding bus. Make connection at same location as grounding electrode conductor connection. Where grounded metal building frame does not exist, bond to metal water pipe at point of entry to building.
3. Hangers and supports
- A. Provide all required hangers, supports, anchors, fasteners, fittings, accessories and hardware necessary for the complete installation of the electrical work.
  - B. Hangers and supports shall meet ASTM standards for coatings, NECA 1 standards for workmanship, NFPA 70, and UL 5b for strut-type channel raceway and fittings.
  - C. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported.
  - D. Steel components: use corrosion resistant materials suitable for the environment where installed. Use zinc-plated steel for indoor dry locations. Use galvanized steel, stainless steel, fiberglass or approved equivalent for outdoor, damp and wet location installations.
  - E. Conduit and cable supports:
  - F. Conduit straps: one-hole or two-hole, zinc plated.
  - G. Conduit clamps: bolted type.
  - H. Outlet box supports: hangers and brackets suitable for boxes to be supported.
  - I. Metal channel (strut) framing systems: factory fabricated continuous slotted metal channel and associated fittings, accessories, and hardware for field-assembly of supports. All locations: use 12 ga. Galvanized steel.
  - J. Hanger rods: continuous threading, zinc-plated steel.
  - K. Use of power-actuated fasteners requires approval of architect and structural engineer.
  - L. Unless specifically indicated, do not support any electrical component from the roof deck.
  - M. Plastic and lead anchors are not permitted.
4. Raceways and boxes
- A. Provide a complete wiring system of raceways and boxes located as indicated on drawings and at locations as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements. Locations indicated on drawings are approximate unless dimensioned.



- B. Standards: materials shall comply with ANSI c80. (x), NEMA and UL requirements as applicable for type and material.
- C. Minimum conduit size, unless otherwise noted: interior - 3/4", exterior exposed 3/4", exterior underground - 1".
- D. Conduit applications:
  - 1. Underground:
    - Under slab on grade - schedule 40 PVC conduit with rigid metal conduit sweeps.
    - Exterior in trench - use schedule 40 or schedule 80 PVC conduit with rigid metal conduit sweeps...
  - 2. Exterior, concrete encased - use type EB rigid PVC conduit, transition to rigid metal where emerging from underground.
  - 3. Embedded within slab: floor box slab-on-grade applications only.
  - 4. Concealed in masonry walls: use EMT with flush mounted masonry boxes.
  - 5. Concealed in hollow stud walls: use EMT conduit or mc cable (where allowed). Provide flush sheet-metal boxes.
  - 6. Interior damp or wet locations: use rigid metal conduit, intermediate metal conduit or schedule 40 PVC conduit. Provide cast metal or nonmetallic outlet, junction and pull boxes.
  - 7. Exposed, interior dry locations: use EMT conduit.
  - 8. Exposed finished locations: provide surface metal raceway and fittings. Unless specified on drawings, requires design team approval. Coordinate all vertical runs of surface raceway with architect prior to installation.
  - 9. Connections to luminaires above accessible ceilings: use flexible metal conduit, maximum length of 6 feet.
  - 10. Connections to vibrating equipment: dry locations - use flexible metal conduit or mc cable; damp, wet or corrosive locations - use liquidtight flexible metal conduit; maximum length 6 feet.
- E. Fittings:
  - 1. EMT - comply with NEMA FB 1 and UL 514b. Steel with compression fittings in damp or wet locations, set screw type elsewhere.
  - 2. Rigid metal conduit - comply with ANSI c80.1 and UL 6. Threaded steel or malleable iron. Use fitting listed and labeled as complying with UL 514b in hazardous locations.
  - 3. Flexible metal conduit - comply with NEMA FB 1 and UL 514b. Use steel fittings.
  - 4. Liquidtight flexible metal conduit - comply with NEMA FB 1 and UL 514b. Use steel fittings.
  - 5. Surface metal raceway - provide fittings from same manufacturer as surface raceway. Include all required elbows, couplings mounting clips, covers, end fittings and device mounting brackets.
- F. Boxes: where a box size is not indicated, size to comply with NFPA 70, but not less than applicable minimum size specified.
  - 1. Use sheet metal steel boxes in dry locations.
  - 2. Use cast iron or cast aluminum boxes with threaded hubs where exposed rigid metal conduit is used.
  - 3. Use nonmetallic boxes where exposed rigid PVC is used.
  - 4. Use suitable concrete type boxes where flush-mounted in concrete.
  - 5. Use suitable masonry type boxes where flush-mounted in masonry walls.

6. Use raised covers suitable for type of wall construction and device configuration where required.
  7. Use multi-gang boxes of single-piece construction, do not use field connected gangable boxes.
  8. Minimum box size, unless otherwise indicated: wiring device - 4 inch square by 1-1/2" deep; communications system outlet 4 inch square by 2-1/8" deep.
  - G. Cabinets and enclosures: comply with NEMA 250, UL 50 and UL 50e or UL 508a.
    1. Use NEMA type 1, painted steel for indoor clean, dry locations.
    2. Use NEMA type 3r, painted steel for outdoor and wet locations.
    3. Provide screw cover enclosures for pull and junction boxes.
    4. Provide lockable, hinge cover type for equipment enclosures.
  - H. Mechanical sleeve seals: modular mechanical type, with interlocking rubber links shaped to continuously fill annular space between objects and sleeve, connected with bolts and pressure plates to provide a watertight seal and electrical insulation.
  - I. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, patch surfaces to match adjacent surfaces.
  - J. Disconnect and remove abandoned outlets and devices.
  - K. Install blank plates on abandoned, empty boxes.
  - L. Extend existing raceway and box installation using materials and methods compatible with existing electrical installation or as specified.
5. Identification for electrical systems
- A. Existing work: unless specifically excluded, identify existing elements to remain that are not already identified in accordance with the specified requirements.
  - B. Service equipment: use identification nameplate to identify each service disconnecting means.
  - C. Emergency system equipment; use identification nameplate or voltage marker to identify emergency equipment in accordance with NFPA 70. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
  - D. Use identification nameplates to identify each piece of electrical distribution and control equipment and associated sections, compartments and components. Identify: name, ampere rating, loads served (disconnect switches, enclosed controllers, and transformers only), voltage and phase, and power source/circuit number. Include location of source/load served if not within sight of equipment
  - E. Provide laminated acrylic or non-conductive phenolic with beveled edges. Nameplates for each equipment enclosure, relay, switch, and device. Nameplates shall be, 1/8" thick, white with black center core, matte finish surface, beveled edges, square corners. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 1" by 2-1/2". Lettering shall be a minimum of 1/4" high normal block style.
  - F. Provide wire and cable markers or identification labels to identify circuit number at each source location; within boxes where more than one circuit is present; within equipment enclosures where conductors enter and exit the enclosure; and in cable trays (maximum 20 ft. Intervals). Provide wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
  - G. Provide voltage markers to identify highest voltage present for accessible conduits (maximum 20 ft. Intervals).

- H. Provide pre-labeled, snap around pipe markers on all conduits. Markers shall comply with ANSI A 13.1-1988 standards and indicated voltage.
  - I. Warning labels: use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat and abrasion resistant.
  - J. Clean surfaces to receive adhesive products according to manufacturer's instructions.
  - K. Install identification products to be plainly visible for examination, adjustment, servicing and maintenance.
  - L. Install identification products centered, level and parallel with lines of item being identified.
6. Wiring devices
- A. Receptacles:
    - 1. Self-grounding complying with NEMA WC 1 and NEMA WD 6 and listed complying with UL498.
    - 2. Single and duplex receptacles shall be rated 20 amperes, 125 volts, two-pole, three-wire, grounding type with polarized parallel slots.
    - 3. Color of bodies shall be selected by the architect.
    - 4. Receptacle shall be side-wired or back-wired with two screws per terminal. The third grounding pole shall be connected to the metal mounting yoke.
    - 5. Receptacles with ground fault circuit interrupters shall have the current rating as indicated, and shall be UL 943, class a type unless otherwise shown.
    - 6. Ground fault circuit protection shall be provided as required by NFPA 70 or as indicated on the drawings.
    - 7. USB charging devices: provide devices listed per UL 1310 with two-port charging capacity of 2.1 a, minimum or 4.2 a minimum for four-port devices.
    - 8. Locking devices: refer to drawings for NEMA locking configurations.
    - 9. Mount receptacles and data outlets 18" above finished floor, and other devices as indicated. Measure mounting heights of wiring devices and outlets to top of device or outlet.
    - 10. Provide tamper resistant receptacles where indicated on drawings.
  - B. Line voltage wall switches:
    - 1. Ac only, quiet operating general use snap switches with silver alloy contacts complying with NEMA WD 1/ NEMA WD 6 type as indicated on drawings.
    - 2. Industrial specification grade, 20a, 120/277 v with standard toggle type switch actuator and maintained contacts. Single pole single throw, three-way, or four-way as indicated on drawings.
    - 3. Color of bodies shall be selected by the architect.
    - 4. Switch shall be side-wired or back-wired with binding clamp, with separate ground screw terminal.
    - 5. Locking (keyed) type switches shall include lever type three position switch actuator with off position in center.
  - C. Line voltage dimmer switches:
    - 1. Solid-state with continuous full-range even control following square law dimming curve with integral rf interference filtering, power failure preset memory and air gap switch complying with NEMA WD 1 and NEMA WD 6 and UL1472. Type and rating suitable for load controlled as indicated on drawing.
    - 2. Slide control type with separate on/off switch.
    - 3. Color of bodies shall be selected by the architect.



4. Power rating, unless otherwise indicated on drawings:  
incandescent - 600 VA; fluorescent - 600 VA; electronic low voltage  
- 400 VA; magnetic low voltage - 600 VA.
5. Provide with locator light, illuminated with load off.
- D. Device plates
  1. Device plates shall be one-piece type and shall be provided for receptacles, outlets, switches and fittings.
  2. Plates on unfinished walls and on fittings shall be galvanized sheet steel.
  3. Finish selection by architect.
  4. Plates shall be installed with all four edges in continuous contact with finished wall surfaces without the use of mats or similar devices. Plaster fillings will not be permitted.
  5. Plates installed in wet locations shall be gasketed and provided with a hinged, gasketed cover, unless otherwise specified.

#### D5020-102 – LIGHTING FIXTURES

1. Interior luminaires
  - A. Provide products that comply with requirements of NFPA 70.
  - B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
  - C. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, drivers, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
  - D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. As necessary for a complete operating system.
  - E. Hazardous (classified) location luminaires: listed and labeled as complying with UL 844 for the classification of the installed location.
  - F. Luminaires mounted in continuous rows: provide quantity of units required for length indicated, with all accessories required for joining and aligning.
  - G. Provide accessory plaster frames for luminaires recessed in plaster ceilings.
  - H. Luminaires in special environments:
    - I. Showers: provide with non-conductive trim.
    - J. Wet locations: provide with sealed and gasketed lens.
2. Drivers
  - A. Control input
    1. 4-wire (0-10v dc voltage controlled) dimming drivers: connect to devices compatible with 0 to 10v analog control protocol, class 2, capable of sinking 0.6 ma per driver at a low end of 0.3v. Limit the number of drivers on each 0-10v control output based on voltage drop and control capacity.
    2. Driver: approved by dimming system manufacturer as suitable for operation with control unit and suitable for led source type and quantity specified for luminaire.

#### D5020-103 – LIGHTING CONTROLS

1. Line voltage occupancy/vacancy sensor switches
  - A. Product description:
    1. Provide wall switch style occupancy/vacancy sensor capable of turning lights off when the space becomes unoccupied and on when the space becomes re-occupied. Provide with 0-10v dimming capabilities and/or integral daylight control, where indicated on the drawings. Refer to drawings for occupancy or vacancy mode setting.
  - B. Sensor switch requirements:

1. Sensor switch shall be line voltage @ 120/277 vac, rated for 20a. Sensor technology shall be dual technology (pir and ultrasonic) with field of view of 180 degrees. Sensor switch shall be capable of operating with led. Sensor switch shall be set to:
  2. Auto-on, auto-off mode (occupancy sensor)
  3. Manual-on, auto-off mode (vacancy sensor)
  4. Dipswitch selectable to toggle between occupancy and vacancy mode.
  5. Sensor shall be capable of turning lights off after 20 minutes of inactivity. Switch shall also have 10 and 20 minute overrides. Provide device capable of accepting a 2-wire (hot and neutral) input plus ground. Sensor switch shall be capable of operating in conjunction with a 3-way switch per manufacturers requirements, where indicated on drawings. Provide with 0-10v dimming control.
2. Low voltage occupancy/vacancy sensors
  - A. Sensor requirements:
    1. Sensor shall be dual technology (pir and ultrasonic), unless otherwise noted on drawings. Sensor shall be set to:
    2. Auto-on, auto-off mode (occupancy sensor)
    3. Manual-on, auto-off mode (vacancy sensor)
    4. Dipswitch selectable to toggle between occupancy and vacancy mode.
  - B. Coverage:
    1. Small space (< 500 sq ft): 500 square feet minimum
    2. Medium space (500-1000 sq ft): 1,000 square feet minimum
    3. Large space (>1000 sq ft): 2,000 square feet minimum. Multiple sensors where shown on the plans.
  - C. Specific applications:
    1. Corridors and hallways: capable of detecting major motion with a long, narrow pattern designed for corridor and aisle sensing.
      - High bay areas: for areas with ceilings more than 15 feet above finished floor, provide high-bay pir-only ceiling mounted occupancy sensor.
3. Photocells
  - A. Sensor requirements:
  - B. Sensor shall be furnished with a control-calibration module capable of being switched between multiple measurement ranges, separate trip points for high and low response settings, and three-minute time delay between switchout outputs to avoid nuisance tripping. For standalone dimming photo sensor applications, provide photo sensor unit with integral 0-10v controller, compatible with the specified dimming drivers, for direct continuous dimming of up to 50 drivers.
4. Room controllers / power packs
  - A. Product description:
    1. Integrated lighting, dimming, and equipment switching control system for mounting in a concealed space, enclosure shall be plenum rated. Provide pre-configured lighting controller(s), with capabilities for manual setup, and software setup through programming port, configured as a standalone controller.
  - B. Power packs.
    1. Dimmable load types: 16a per channel at 100 to 277vac, 50/60 HZ: 0 – 10v led drivers.
5. Low voltage keypads / switches
  - A. Lighting keypad shall be provided by the same manufacturer as the lighting control system.

- B. Provide low voltage keypads / switches with configuration, functionality and operation as indicated on drawings.
  - C. General requirements:
    - 1. Custom engravable buttons/switches, refer to drawings for labeling. Refer to paragraph c below for additional requirements.
    - 2. Quantity and function as indicated on drawings.
    - 3. Led indicators, as shown on drawings.
    - 4. Configured to fit in standard gang boxes.
    - 5. Color: by architect
  - D. Labeling:
    - 1. Provide factory engraved labels for all low voltage keypads / switches buttons.
    - 2. Refer to lighting control details on drawings for suggested labeling of lighting control equipment. Coordinate naming of scenes/control zones with the owner. Provide a worksheet listing remote keypad controls, labeling requests and locations to the owner for their labeling requests.
    - 3. Do not order labels until owner coordination is complete.
6. UI924 bypass relays
- A. General requirements:
    - 1. Refer to drawings and details for required functions.
    - 2. The UL 924 bypass relay shall automatically illuminate connected emergency loads upon utility power interruption, regardless of room switch position. (NEC article 700)
7. Lighting relay panels
- A. Refer to drawings and details for required functions and configurations.
  - B. Product description: standalone relay panel with quantity of relays as indicated on drawings. Standalone panel shall utilize a digital controller with lcd screen and numerical keypad.

D5030 – COMMUNICATIONS AND SECURITY SYSTEMS

D5030-101 – STRUCTURED CABLING

- 1. Horizontal cabling:
  - A. Shall be manufactured by general cable, belden, mohawk or hitachi.
  - B. All cabling shall meet or exceed commercial building telecommunications cabling standard ansi/tia/eia 586-c.2, adhering to category 6 specifications.
  - C. All cabling shall be plenum/cmp rated.
- 2. Supports:
  - A. All horizontal cabling shall be supported via j-hooks from the telecommunications equipment room to work area outlet. J-hooks shall be manufactured by cooper b-line, caddy or chatsworth.
  - B. J-hooks shall be spaced maximum 5'-0" on center.
- 3. Patch panels:
  - A. Shall be manufactured by hubbell, ortronics or panduit.
  - B. Patch panels shall be 48 port, 2u, tia/eia 568b category 6 type with integral printed circuit board, color coding, idc type terminations and 8-position jacks.
  - C. Provide horizontal wire management above and below each patch panel, sized no smaller than 1 rack unit.
  - D. Each patch panel shall be supplied with category 6 pre-terminated patch cords. Quantity shall be (48) per patch panel plus 10% spare. 50% of patch cords shall be 5 feet in length, 50% shall be 7 feet in length.
- 4. Work area outlets:
  - A. Shall be manufactured by hubbell, leviton, ortronics or panduit.
  - B. Single gang thermoplastic faceplate equipped with front-loading modules with the number of voice and data jacks indicated on the drawings.



- C. Provide faceplate with clear plastic window on the top and bottom of faceplate for labeling.
  - D. Faceplate color selection by architect.
  - E. Provide blank-off modules for all empty positions.
  - F. Provide modular jacks that meet or exceed category 6 for connecting hardware as specified in ansi/tia/eia 568-b.2 standard.
  - G. Jacks shall be front-loading, 110 style, 8-pin idc and rj45 type.
5. Labeling:
- A. All labeling standards shall be confirmed with and approved by owner's it staff prior to performing work. It is the responsibility of the contractor to coordinate with owner's staff.
  - B. Each work station outlet jack and corresponding patch panel port shall be marked with the same, unique label.
6. Installation:
- A. Mark the plate with standard nomenclature as required by the configuration. Mark the outlet plainly and neatly with its station identification, as indicated in above paragraph. The station identification shall also be marked inside the outlet plate on the backing plate of the outlet, and shall match the id used at the patch panel port. Make the outlet marking using the panduit system or equal, except for the inside marking which may be by indelible marker. Place exposed marking on outlet plates under a transparent window for protection. Label cable with permanent marker compliant with eia/tia 606, six (6) inches back from the termination at both ends.
  - B. At the station end, terminate 4-pair utp cables on 8-pin modular jacks according to tia/eia 568b terminating specifications.
  - C. At the telecom room, terminate all 4-pair utp cables (voice & data) onto panel mounted 8-pin modular connectors that meet the tia/eia 568b specification. Provide sufficient patch jacks (ports) at each equipment closet to terminate the cables from all of the stations served by that closet. Mark the voice and data patch terminating jacks with its associated station identification in ascending sequential order. Mark patch panel using the panduit system or equal. Match the patch panels into the supplied equipment racks.
7. Testing:
- A. Horizontal station cables shall be free of shorts within the pairs, and be verified for continuity, pair validity, and polarity, and wire map (conductor position on the modular jack). Any defective, split or miss-positioned pairs must be identified and corrected.
  - B. Testing of the cabling systems rated at tia category 6/6a and above shall be performed to confirm proper functioning and performance.

D5030-102 – FIRE DETECTION AND ALARM

- 1. Provide a UL listed, supervised and addressable fire alarm system.
- 2. General Requirements: The system shall include but not be limited to all control panels, power supplies, initiating devices, audible (Voice Evac) and visual alarm devices, and all accessories required to provide a complete operating fire alarm system in accordance with code and local fire department.
- 3. The system shall be ADA compliant and installed in accordance with NFPA 72 utilizing combination speaker/strobe units and strobe only units.
- 4. Double action manual pull stations shall be provided at all exits equipped with local sounder protective covers.
- 5. System shall include photoelectric type smoke detectors and rate of rise heat detectors where indicated.

D5040 – SPECIAL ELECTRICAL SYSTEMS

D5040-101 – LIGHTNING PROTECTION SYSTEM

1. Provide all labor, material, equipment, and services required for the complete lightning protection system in accordance with NFPA 780, UL96A and applicable contract drawings for the Building. System shall receive UL Master Label.
2. The system to be furnished under this specification shall be the standard product of a manufacturer regularly engaged in the production of lightning protection equipment and shall be the manufacturer's latest approved design. The equipment shall be UL listed and properly UL labeled. All equipment shall be new, and of a design and construction to suit the application where it is used in accordance with accepted industry standards and UL and NFPA requirements.
3. Provide a complete lightning protection system in compliance with the specifications and standards of the most current editions of the National Fire Protection Association's Lightning Protection Standard NFPA-780, and Underwriters Laboratories Lightning Protection Standard UL96A and LPI 175. The system shall be installed by a lightning protection contractor who is listed by Underwriters Laboratories, Inc. and a member of LPI.
4. All lightning protection materials and components shall comply in weight, size and composition with UL 96 and NFPA-780 lightning protection material requirements for this type of structure. All materials shall be copper, bronze, or stainless steel. Aluminum components shall be used in locations where system components are mounted to aluminum surfaces to avoid galvanic corrosion of dissimilar metals. Class I materials shall be used on structures not more than 75 feet in height. Class II materials shall be used on structures over 75 feet in height.

END OF DOCUMENT





***South Shore Regional School District***



***South Shore Regional Vocational Technical High School***

*476 Webster Street  
Hanover, MA 02339*

***Telecommunications, Security, and Audiovisual  
Schematic Design Narrative***

***New Construction***

*February 29, 2024*

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## PART 1 - ABOUT

- 1.1 The following describes the proposed new telecommunications, security, and audiovisual and paging/mass communications systems for the new South Shore Regional Vocational Technical High School (SSVT) located at 476 Webster Street in Hanover, Massachusetts.

## PART 2 - TELECOMMUNICATIONS

### 2.1 Internet Service

- A. The existing underground Comcast Business fiber service shall be removed, and a new service shall be provided to the new school via underground (2) 4inch conduits (min) to a new telecom room for service demarc. The new telecom rooms shall not be shared with other utilities (electrical, mechanical, plumbing) and shall have a dedicated HVAC system to maintain.

### 2.2 Telecom Rooms

- A. All telecommunications cabling will be terminated at new four-post racks in climate-controlled telecom rooms serving one (1) wing per floor. Telecom rooms will consist of at least two (2) four-post racks with 6 and 10-inch vertical cable management and uninterrupted power by two (2) 2-3KVA 2RU UPS per rack to support network, security, and mass communications systems. 12 and 18-inch overhead cable runway for cable organization and support.

### 2.3 Network Cabling Infrastructure

- A. **Backbone Cabling:** New telecom rooms will be connected back to the main telecom demarc room via 6-strand singlemode OS2, 12-strand multimode OM4 armored fibers, and six (6) category 6A copper cables in a j-hook pathway. AR1 only - Existing buildings connected via outside plant cabling shall be repathed and cabled with OSP 6-strand singlemode OS2, 12-strand multimode OM4 armored fibers via 4inch conduit to the nearest new telecom room.
- B. **Horizontal Cabling:** All work area outlets, WAPs (wireless access points), and other horizontal cabling-connected devices will be augmented Category 6 (CAT6A), at a minimum, as recommended by BICSI. All cabling will be terminated on CAT6A color-coded 8P8C RJ45 connectors. White thermoplastic faceplates will be utilized throughout the project. For above-ceiling terminations, surface-mounted two (2) port plenum-rated boxes shall be provided.
1. Typical Trade rooms, classrooms, and commons:
- Four (4) port faceplate at the teacher desk location. Three (3) connectors will be terminated per faceplate, one (1) for phone and two (2) for data.
  - Wall-mounted phone for paging/intercom.
  - One (1) WAP per room. Two (2) CAT6A per device.



2. Teacher Work Room, Office, Conference Room, Kitchen:
    - a. Four (4) port faceplate at each work area. Three (3) connectors will be terminated per faceplate, one (1) for phone and two (2) for data.
    - b. Wall-mounted phone for paging/intercom.
    - c. One (1) WAP per room. Two (2) CAT6A per device.
  3. Cafeteria
    - a. Two (2) Wall-mounted phones for paging/intercom.
    - b. Two (2) WAP per room. Two (2) CAT6A per device.
    - c. Four (4) port faceplate for stage.
  4. Gymnasium
    - a. Two (2) Wall-mounted phones for paging/intercom.
    - b. Four (4) WAP per room. Two (2) CAT6A per device. (in exterior IK-rated enclosures)
    - c. Four (4) port faceplate for scoreboard/AV.
- C. **Cabling Pathways:** Device back boxes shall be equal to Randl Industries 5” square by 2-7/8” deep boxes with a 1-inch conduit above the accessible ceiling. Open cable pathways (J hooks) will be provided in accessible ceiling areas by the division 27 contractor. In areas where the room/area is open to structure, cabling shall be routed through a dedicated cable tray.

## 2.4 Network Equipment

- A. SSVT utilizes SonicWall for its firewall. The existing firewall was recently replaced in 2022 through the E-rate program. This SonicWall can be turned over to SSVT before renovation or demo to be reused in the new telecom rooms.
- B. SSVT's existing network switches were recently replaced in 2022 with HP ProCurve 2920-48G POE+ units purchased through the e-rate program. These switches can be turned over to SSVT before renovation or demo to be reused in the new telecom rooms.
- C. New switches to support additional horizontal cabling shall match the HP ProCurve 2920-48G POE+ switches (the latest model at construction time). Switches will be connected back to the core switch in the demarc room via SFP fiber ports and the fiber backbone infrastructure.
- D. All new WAP (wireless access points) will provided per the above

## 2.5 Outline of Codes/Guidelines Used

- A. Building Industry Consulting Service International (BICSI) – Telecommunications Distribution Methods Manual (TDMM), 14<sup>th</sup> Edition.
- B. Telecommunications Industry Association (TIA)
- C. International Code Council (ICC)





- D. National Fire Protection Association (NFPA) 70 - National Electric Code (NEC), 2023 edition as adopted by the State of Massachusetts (effective February 17, 2023).
- E. National Electrical Manufacturers Association (NEMA)



## PART 3 - SECURITY

### 3.1 Security Systems

- A. **Video Management Software:** A new network based recording server operating on video management software (VMS) to support the below cameras shall be provided. VMS shall be selected during design but an on-premise video recording server shall be provided and installed in the main telecom room.
- B. **Cameras:** All cameras shall be high resolution, IP POE connected/powered, and have object detection/classifications for humans, vehicles, objects. Manufacturers such as Hanwha, Avigilon, Axis, and iPro are acceptable. Cameras will be installed in the following locations:
  1. Exterior:
    - a. 12-20MP Multi-sensor cameras, vandal-resistant, integral IR wall or corner mounted. General coverage of the perimeter of the building, parking, annex buildings, and fields.
    - b. 5MP vandal-resistant, integral IR, fixed domes for main entry, egress doors, as well as outdoor trade areas, courtyards, and coverage.
    - c. Pole Mounted cameras for site Coverage:
      - Parking Lot
      - Site Entrys
      - Bus Area
  2. Interior: 5MP vandal-resistant, integral IR, fixed domes.
    - a. Entry Vestibule
    - b. Stairwells and Elevator
    - c. Corridor Areas (non-learning)
    - d. Cafeteria (If requested by SSTV)
    - e. Gymnasium (If requested by SSTV)
- C. **Cabling:** All cabling and connectivity shall be equal to the telecommunication horizontal cabling (CAT6A). Surge protection shall be provided on all exterior devices. All cabling will be terminated at the telecom rooms designated for that floor/area on dedicated patch panels.
- D. **Cabling Pathways:** Security cabling will utilize open cable pathways (J hooks) in accessible ceiling areas. In areas where the room/area is open to structure, cabling shall be routed through a dedicated conduit to each device.
- E. **Viewing Station:** 55inch wall-mounted viewing monitors will be provided at the main office and principal's office. Displays will be connected to a micro-computer to connect to the access control and video management software for viewing and monitoring.



- F. **Access Control:** The new access control system will be a software and/or web based access control system with controllers, power supplies, and batteries to provide electronic control on the following doors:
  - 1. Exterior doors
  - 2. Main Office
  - 3. Stairwell doors
  - 4. Elevator
  - 5. Receiving
  - 6. Telecom Rooms
  - 7. Teacher Workroom
  - 8. Trade and Classrooms
- G. **Video Intercom:** Provide a new IP-based video intercom at the main entry and receiving entry that includes a NEMA 4X-rated call station and a desktop-mounted video master station with door release capabilities—devices to be tied into the access control and VMS system for recording and door integration.
- H. **Intrusion Alarm:** The intrusion alarm system shall be equal to Honeywell. The system shall be integrated into the access control system for door monitoring of non-access control doors. Connected to a UL listed central station dispatch center.
  - 1. Door Contacts shall be provided on all exterior doors for monitoring and alarm.
  - 2. Motion sensors shall be provided at all lower-level rooms/areas with doors and/or windows to at grade.
  - 3. Keypads shall be provided at the main entry, gym entry, and back receiving door. Receiving door keypad shall only allow disarming of the kitchen and café area. The culinary public restaurant shall be zoned separately. Coordinate requirements with SSTV.

### 3.2 Maintenance Consideration

- A. It is highly likely that one or more outside service vendors will need to be retained to maintain these systems and provide regular training to school department staff.
- B. A 3-year service maintenance agreement shall be included as part of the construction contract. The service agreement shall include the following:
  - 1. 24/7/365 Phone support.
  - 2. 4-hour technician dispatch for emergency calls.
  - 3. Quarterly on-site inspections include camera refocusing and cleaning.
  - 4. Monthly remote inspection to confirm all systems and devices are operational.
  - 5. 3-year warranty on all devices and equipment.
- C. 3 years of software updates/patches. Updates shall be bi-annual.





### 3.3 Outline of Codes/Guidelines Used

- A. Building Industry Consulting Service International (BICSI) – Telecommunications Distribution Methods Manual (TDMM), 14<sup>th</sup> Edition.
- B. Telecommunications Industry Association (TIA)
- C. International Code Council (ICC)
- D. National Fire Protection Association (NFPA) 70 - National Electric Code (NEC), 2023 edition as adopted by the State of Massachusetts (effective February 17, 2023).
- E. National Electrical Manufacturers Association (NEMA)



## PART 4 - AUDIOVISUAL AND PAGING/MASS COMMUNICATIONS

### 4.1 Audiovisual Systems

- A. Typical trade rooms, Classroom, small group room, Teacher room:
  - 1. Wall-mounted (or mobile) interactive Cleartouch display with wireless screen share integrated.
  - 2. Voice Equalization System equal to LightSpeed-Tek Topcat (Ceiling) or Redcat (wall) system with FlexMike for teachers and T3 for students. Provide with Access Link connected to the integrative display.
  - 3. HDMI and USB Type-C connection outlet at the teacher workarea.
- B. Conference Room:
  - 1. Wall-mounted interactive Cleartouch display with wireless screen share integrated.
  - 2. Voice Equalization System equal to LightSpeed-Tek Topcat (Ceiling) or Redcat (wall) system with FlexMike and T3. Provide with Access Link connected to the integrative display.
  - 3. HDMI and USB Type-C connection outlet at the floor box.
- C. Cafeteria
  - 1. Wall mounted enclosure in Stage room for AV equipment.
  - 2. Ceiling mounted laser projector and motorized projector screen.
  - 3. Ceiling Mount speakers in the cafeteria connected to rack-mounted multi-channel network amplifier. Amp set for paging input priority over local input.
  - 4. Network based control system tied into local lighting control system and motorized shades.
  - 5. Mobile microphones, handheld and lapel.
  - 6. IR based assistive listening system.
- D. Gymnasium
  - 1. Wall mounted enclosure in storage room for AV equipment.
  - 2. Ceiling mounted laser projector and motorized projector screen.
  - 3. Ceiling Mount speakers in the cafeteria connected to rack-mounted multi-channel network amplifier. Amp set for paging input priority over local input.
  - 4. Network based control system tied into local lighting control system and motorized shades.
  - 5. Mobile microphones, handheld and lapel.
  - 6. IR based assistive listening system.
- E. **Digital Signage:** Wall-mounted displays will be installed in common public spaces, like the main entry, office area, Gym lobby, and connected to digital signage player and software platform similar to Safari Montage <https://safarimontage.com/os/> or BrightSign <https://www.brightsign.biz/brightsign-players/series-4/>



## 4.2 Mass Communications System

- A. SIP-based phone, paging, clock, bell, and mass notification alerting system. SSTV currently utilizes Raptor Technologies for its visitor management system.
1. The new system shall be comprised of the following devices:
    - a. Combination speaker, LCD display, LED flasher, and integrated talk back microphone; POE powered. One per typical classroom and/or office space.
      - Extension speakers will be utilized in larger spaces that need additional coverage. I.e. library, cafeteria.
    - b. SIP-enabled voIP phone with dial out capabilities. One per typical classroom and/or office space.
    - c. Main office console unit with gooseneck mic and handset.
    - d. Interior 70V ceiling speaker for corridor or circulation areas.
    - e. Exterior 70V horn speakers. One at each exterior exit door.
    - f. Multichannel 70V hybrid IP amplifier for 70V speakers.
    - g. Server gateway hardware appliance.
    - h. 24 and 48 port patch panels to support each device.
    - i. 24 and 48 port layer3 Poe+ network switches to support each device.
  2. The proposed new system will utilize a mass notification software package that requires end point device and user licenses. The software provides the following features:
    - a. Ability to add pre-recorded messages for pre-defined events.
    - b. Text, audio, and visual-based alerts. Alerts can be distributed to multiple types of devices including:
      - IP devices - phones, speakers, paging devices.
      - Mobile phones and tablets.
      - Digital signage.
      - Computer workstations.
    - c. 911 dial out.
      - Emergency pre-configured notifications can be sent the moment 911 is dialed.
      - Automated alerts when 911 is dialed from a land line phone within the facility.
      - Call listening and recording for incident reporting.
    - d. Multiple ways to indicate an alert including via:
      - Manual:
        - a) Desktop, mobile, or tablet app.
        - b) Web browser.
        - c) Fixed and wearable panic buttons.





- d) Programmed extension number(s).
- Automated:
  - a) Emergency 911 call from within the school.
  - b) Physical security systems (access, video, intrusion).
  - c) Sever weather.
  - d) Fire alarm systems.
- 3. As with any software system, proper configuration/programming and training is required. The proposed system shall come with on-site factory start up, onboarding, and end user training. System configuration shall be coordinated with SSTV administrators. Pre-construction programming meetings will be required to ensure the proposed system functionality is implemented per SSTV requirements.
- B. **Cabling:** All new network and POE-powered AV equipment will be augmented Category 6 (CAT6A), at a minimum, cabling terminated on CAT6A color-coded 8P8C RJ45 connectors.
- C. **Cabling Pathways:** AV cabling will utilize open cable pathways (J hooks) in accessible ceiling areas. In areas where the room/area is open to structure, cabling shall be routed through a dedicated conduit to each device.

#### 4.3 Maintenance Consideration

- A. It is highly likely that one or more outside service vendors will need to be retained to maintain these systems and provide regular training to school department staff.
- B. A 3-year service maintenance agreement shall be included as part of the construction contract. The service agreement shall include the following:
  - 1. 24/7/365 Phone support.
  - 2. 4-hour technician dispatch for emergency calls.
  - 3. Quarterly on-site inspections include camera refocusing and cleaning.
  - 4. Monthly remote inspection to confirm all systems and devices are operational.
  - 5. 3-year warranty on all devices and equipment.
- C. 3 years of software updates/patches. Updates shall be bi-annual.

#### 4.4 Outline of Codes/Guidelines Used

- A. Building Industry Consulting Service International (BICSI) – Telecommunications Distribution Methods Manual (TDMM), 14<sup>th</sup> Edition.
- B. ANSI/BICSI 007 Standard for Intelligent Buildings.
- C. Telecommunications Industry Association (TIA)
- D. International Code Council (ICC)



- E. National Fire Protection Association (NFPA) 70 - National Electric Code (NEC), 2023 edition as adopted by the State of Massachusetts (effective February 17, 2023).

**End of Narrative**

***South Shore Regional School District***



***South Shore Regional Vocational Technical High School***

*476 Webster Street  
Hanover, MA 02339*

***Telecommunications, Security, and Audiovisual  
Schematic Design Narrative***

***Addition/Renovation***

*February 29, 2024*

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## PART 1 - ABOUT

- 1.1 The following describes the proposed new telecommunications, security, and audiovisual and paging/mass communications systems for the addition and renovation to the main campus of the South Shore Regional Vocational Technical High School (SSVT) located at 476 Webster Street in Hanover, Massachusetts.

## PART 2 - TELECOMMUNICATIONS

### 2.1 Internet Service

- A. The existing South Shore Vocational Technical High School (SSVT) underground Comcast Business fiber service demarc/terminated in the original A.V. Storage 127 will need to be demoed and a new underground service brought in via (2) 4inch conduits (min) to a new telecom room for service demarc. The new telecom rooms shall not be shared with other utilities (electrical, mechanical, plumbing) and shall have a dedicated HVAC system to maintain.

### 2.2 Telecom Rooms

- A. Existing telecom Closets, Rooms/spaces are insufficient, not secured, or not climate controlled. Spaces are shared with other building systems or storage, causing network and security vulnerabilities. All telecommunications cabling will be terminated at new four-post racks in climate-controlled telecom rooms designated for that floor/area. New telecom rooms will consist of a minimum of two (2) four-post racks with 6 and 10-inch vertical cable management and uninterrupted power by two (2) 2-3KVA 2RU UPS per rack to support network, security, and mass communications systems. 12 and 18-inch overhead cable runway for cable organization and support.

### 2.3 Network Cabling Infrastructure

- A. **Backbone Cabling:** New telecom rooms will be connected back to the main telecom demarc room via 6-strand singlemode OS2, 12-strand multimode OM4 armored fibers, and six (6) category 6A copper cables in a j-hook pathway. AR1 only - Existing buildings connected via outside plant cabling shall be repathed and cabled with OSP 6-strand singlemode OS2, 12-strand multimode OM4 armored fibers via 4inch conduit to the nearest new telecom room.
- B. **Horizontal Cabling:** All work area outlets, WAPs (wireless access points), and other horizontal cabling-connected devices will be augmented Category 6 (CAT6A), at a minimum, as recommended by BICSI. All cabling will be terminated on CAT6A color-coded 8P8C RJ45 connectors. White thermoplastic faceplates will be utilized throughout the project. For above-ceiling terminations, surface-mounted two (2) port plenum-rated boxes shall be provided.
  1. Typical Trade rooms, classrooms, and commons:



- a. Four (4) port faceplate at the teacher desk location. Three (3) connectors will be terminated per faceplate, one (1) for phone and two (2) for data.
  - b. Wall-mounted phone for paging/intercom.
  - c. One (1) WAP per room. Two (2) CAT6A per device.
2. Teacher Work Room, Office, Conference Room, Kitchen:
- a. Four (4) port faceplate at each work area. Three (3) connectors will be terminated per faceplate, one (1) for phone and two (2) for data.
  - b. Wall-mounted phone for paging/intercom.
  - c. One (1) WAP per room. Two (2) CAT6A per device.
3. Cafeteria
- a. Two (2) Wall-mounted phones for paging/intercom.
  - b. Two (2) WAP per room. Two (2) CAT6A per device.
  - c. Four (4) port faceplate for stage.
4. Gymnasium
- a. Two (2) Wall-mounted phones for paging/intercom.
  - b. Four (4) WAP per room. Two (2) CAT6A per device. (in exterior IK-rated enclosures)
  - c. Four (4) port faceplate for scoreboard/AV.
- C. **Cabling Pathways:** Device back boxes shall be equal to Randl Industries 5" square by 2-7/8" deep boxes with a 1-inch conduit above the accessible ceiling. Open cable pathways (J hooks) will be provided in accessible ceiling areas by the division 27 contractor. In areas where the room/area is open to structure, cabling shall be routed through a dedicated cable tray.

## 2.4 Network Equipment

- A. SSVT utilizes SonicWall for its firewall. The existing firewall was recently replaced in 2022 through the E-rate program. This SonicWall can be turned over to SSVT before renovation or demo to be reused in the new telecom rooms.
- B. SSVT's existing network switches were recently replaced in 2022 with HP ProCurve 2920-48G POE+ units purchased through the e-rate program. These switches can be turned over to SSVT before renovation or demo to be reused in the new telecom rooms.
- C. New switches to support additional horizontal cabling shall match the HP ProCurve 2920-48G POE+ switches (the latest model at construction time). Switches will be connected back to the core switch in the demarc room via SFP fiber ports and the fiber backbone infrastructure.
- D. All new WAP (wireless access points) will provided per the above



## 2.5 Outline of Codes/Guidelines Used

- A. Building Industry Consulting Service International (BICSI) – Telecommunications Distribution Methods Manual (TDMM), 14<sup>th</sup> Edition.
- B. Telecommunications Industry Association (TIA)
- C. International Code Council (ICC)
- D. National Fire Protection Association (NFPA) 70 - National Electric Code (NEC), 2023 edition as adopted by the State of Massachusetts (effective February 17, 2023).
- E. National Electrical Manufacturers Association (NEMA)





## PART 3 - SECURITY

### 3.1 Security Systems

- A. **Video Management Software:** A new network based recording server operating on video management software (VMS) to support the below cameras shall be provided. VMS shall be selected during design but an on-premise video recording server shall be provided and installed in the main telecom room.
- B. **Cameras:** All cameras shall be high resolution, IP POE connected/powered, and have object detection/classifications for humans, vehicles, objects. Manufacturers such as Hanwha, Avigilon, Axis, and iPro are acceptable. Cameras will be installed in the following locations:
  1. Exterior:
    - a. 12-20MP Multi-sensor cameras, vandal-resistant, integral IR wall or corner mounted. General coverage of the perimeter of the building, parking, annex buildings, and fields.
    - b. 5MP vandal-resistant, integral IR, fixed domes for main entry, egress doors, as well as outdoor trade areas, courtyards, and coverage.
    - c. Pole Mounted cameras for site Coverage:
      - Parking Lot
      - Site Entrys
      - Bus Area
  2. Interior: 5MP vandal-resistant, integral IR, fixed domes.
    - a. Entry Vestibule
    - b. Stairwells and Elevator
    - c. Corridor Areas (non-learning)
    - d. Cafeteria (If requested by SSTV)
    - e. Gymnasium (If requested by SSTV)
- C. **Cabling:** All cabling and connectivity shall be equal to the telecommunication horizontal cabling (CAT6A). Surge protection shall be provided on all exterior devices. All cabling will be terminated at the telecom rooms designated for that floor/area on dedicated patch panels.
- D. **Cabling Pathways:** Security cabling will utilize open cable pathways (J hooks) in accessible ceiling areas. In areas where the room/area is open to structure, cabling shall be routed through a dedicated conduit to each device.
- E. **Viewing Station:** 55inch wall-mounted viewing monitors will be provided at the main office and principal's office. Displays will be connected to a micro-computer to connect to the access control and video management software for viewing and monitoring.



- F. **Access Control:** The new access control system will be an software and/or web based access control system with controllers, power supplies, and batteries to provide electronic control on the following doors:
  - 1. Exterior doors
  - 2. Main Office
  - 3. Stairwell doors
  - 4. Elevator
  - 5. Receiving
  - 6. Telecom Rooms
  - 7. Teacher Workroom
  - 8. Trade and Classrooms
- G. **Video Intercom:** Provide a new IP-based video intercom at the main entry and receiving entry that includes a NEMA 4X-rated call station and a desktop-mounted video master station with door release capabilities—devices to be tied into the access control and VMS system for recording and door integration.
- H. **Intrusion Alarm:** The intrusion alarm system shall be equal to Honeywell. The system shall be integrated into the access control system for door monitoring of non-access control doors. Connected to a UL listed central station dispatch center.
  - 1. Door Contacts shall be provided on all exterior doors for monitoring and alarm.
  - 2. Motion sensors shall be provided at all lower-level rooms/areas with doors and/or windows to at grade.
  - 3. Keypads shall be provided at the main entry, gym entry, and back receiving door. Receiving door keypad shall only allow disarming of the kitchen and café area. The culinary public restaurant shall be zoned separately. Coordinate requirements with SSTV.

### 3.2 Maintenance Consideration

- A. It is highly likely that one or more outside service vendors will need to be retained to maintain these systems and provide regular training to school department staff.
- B. A 3-year service maintenance agreement shall be included as part of the construction contract. The service agreement shall include the following:
  - 1. 24/7/365 Phone support.
  - 2. 4-hour technician dispatch for emergency calls.
  - 3. Quarterly on-site inspections include camera refocusing and cleaning.
  - 4. Monthly remote inspection to confirm all systems and devices are operational.
  - 5. 3-year warranty on all devices and equipment.
- C. 3 years of software updates/patches. Updates shall be bi-annual.



### 3.3 Outline of Codes/Guidelines Used

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## PART 4 - AUDIOVISUAL AND PAGING/MASS COMMUNICATIONS

### 4.1 Audiovisual Systems

- A. Typical trade rooms, Classroom, small group room, Teacher room:
  - 1. Wall-mounted (or mobile) interactive Cleartouch display with wireless screen share integrated.
  - 2. Voice Equalization System equal to LightSpeed-Tek Topcat (Ceiling) or Redcat (wall) system with FlexMike for teachers and T3 for students. Provide with Access Link connected to the integrative display.
  - 3. HDMI and USB Type-C connection outlet at the teacher workarea.
- B. Conference Room:
  - 1. Wall-mounted interactive Cleartouch display with wireless screen share integrated.
  - 2. Voice Equalization System equal to LightSpeed-Tek Topcat (Ceiling) or Redcat (wall) system with FlexMike and T3. Provide with Access Link connected to the integrative display.
  - 3. HDMI and USB Type-C connection outlet at the floor box.
- C. Cafeteria
  - 1. Wall mounted enclosure in Stage room for AV equipment.
  - 2. Ceiling mounted laser projector and motorized projector screen.
  - 3. Ceiling Mount speakers in the cafeteria connected to rack-mounted multi-channel network amplifier. Amp set for paging input priority over local input.
  - 4. Network based control system tied into local lighting control system and motorized shades.
  - 5. Mobile microphones, handheld and lapel.
  - 6. IR based assistive listening system.
- D. Gymnasium
  - 1. Wall mounted enclosure in storage room for AV equipment.
  - 2. Ceiling mounted laser projector and motorized projector screen.
  - 3. Ceiling Mount speakers in the cafeteria connected to rack-mounted multi-channel network amplifier. Amp set for paging input priority over local input.
  - 4. Network based control system tied into local lighting control system and motorized shades.
  - 5. Mobile microphones, handheld and lapel.
  - 6. IR based assistive listening system.
- E. **Digital Signage:** Wall-mounted displays will be installed in common public spaces, like the main entry, office area, Gym lobby, and connected to digital signage player and software platform similar to Safari Montage <https://safarimontage.com/os/> or BrightSign <https://www.brightsign.biz/brightsign-players/series-4/>



## 4.2 Mass Communications System

- A. SIP-based phone, paging, clock, bell, and mass notification alerting system. SSTV currently utilizes Raptor Technologies for its visitor management system.
1. The new system shall be comprised of the following devices:
    - a. Combination speaker, LCD display, LED flasher, and integrated talk back microphone; POE powered. One per typical classroom and/or office space.
      - Extension speakers will be utilized in larger spaces that need additional coverage. I.e. library, cafeteria.
    - b. SIP-enabled voIP phone with dial out capabilities. One per typical classroom and/or office space.
    - c. Main office console unit with gooseneck mic and handset.
    - d. Interior 70V ceiling speaker for corridor or circulation areas.
    - e. Exterior 70V horn speakers. One at each exterior exit door.
    - f. Multichannel 70V hybrid IP amplifier for 70V speakers.
    - g. Server gateway hardware appliance.
    - h. 24 and 48 port patch panels to support each device.
    - i. 24 and 48 port layer3 Poe+ network switches to support each device.
  2. The proposed new system will utilize a mass notification software package that requires end point device and user licenses. The software provides the following features:
    - a. Ability to add pre-recorded messages for pre-defined events.
    - b. Text, audio, and visual-based alerts. Alerts can be distributed to multiple types of devices including:
      - IP devices - phones, speakers, paging devices.
      - Mobile phones and tablets.
      - Digital signage.
      - Computer workstations.
    - c. 911 dial out.
      - Emergency pre-configured notifications can be sent the moment 911 is dialed.
      - Automated alerts when 911 is dialed from a land line phone within the facility.
      - Call listening and recording for incident reporting.
    - d. Multiple ways to indicate an alert including via:
      - Manual:
        - a) Desktop, mobile, or tablet app.
        - b) Web browser.
        - c) Fixed and wearable panic buttons.



- d) Programmed extension number(s).
- Automated:
  - a) Emergency 911 call from within the school.
  - b) Physical security systems (access, video, intrusion).
  - c) Sever weather.
  - d) Fire alarm systems.
- 3. As with any software system, proper configuration/programming and training is required. The proposed system shall come with on-site factory start up, onboarding, and end user training. System configuration shall be coordinated with SSTV administrators. Pre-construction programming meetings will be required to ensure the proposed system functionality is implemented per SSTV requirements.
- B. **Cabling:** All new network and POE-powered AV equipment will be augmented Category 6 (CAT6A), at a minimum, cabling terminated on CAT6A color-coded 8P8C RJ45 connectors.
- C. **Cabling Pathways:** AV cabling will utilize open cable pathways (J hooks) in accessible ceiling areas. In areas where the room/area is open to structure, cabling shall be routed through a dedicated conduit to each device.

#### 4.3 Maintenance Consideration

- A. It is highly likely that one or more outside service vendors will need to be retained to maintain these systems and provide regular training to school department staff.
- B. A 3-year service maintenance agreement shall be included as part of the construction contract. The service agreement shall include the following:
  - 1. 24/7/365 Phone support.
  - 2. 4-hour technician dispatch for emergency calls.
  - 3. Quarterly on-site inspections include camera refocusing and cleaning.
  - 4. Monthly remote inspection to confirm all systems and devices are operational.
  - 5. 3-year warranty on all devices and equipment.
- C. 3 years of software updates/patches. Updates shall be bi-annual.

#### 4.4 Outline of Codes/Guidelines Used

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- D. International Code Council (ICC)





- E. National Fire Protection Association (NFPA) 70 - National Electric Code (NEC), 2023 edition as adopted by the State of Massachusetts (effective February 17, 2023).

**End of Narrative**





**Visual Hazardous Materials Survey  
South Shore Regional Vocational Technical High School  
476 Webster Street  
Hanover Massachusetts**

Prepared For:

Drummey Rosane Anderson, Inc.  
Howard Clock Building  
260 Charles Street, Studio 300  
Waltham, MA 02453

Prepared by:

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## 1.0 INTRODUCTION

CDW Consultants, Inc. (CDW) is pleased to present this preliminary hazardous materials summary report summarizing the findings of the presumed suspect asbestos-containing materials (ACM) and hazardous materials inspection of the South Shore Regional Vocational Technical High School, located at 476 Webster Street in Hanover Massachusetts (the Site). In September 2023, CDW staff conducted visual inspections for suspect ACM and other hazardous materials.

## 2.0 PROJECT UNDERSTANDING

The intent of the preliminary survey was conducted in support of a Feasibility Study for the Site. The hazardous building material survey was conducted to identify suspect asbestos containing materials, lead based paint, visible hazardous materials including mercury switches, transformers, light ballasts, fluorescent tubes, underground storage tanks (USTs), above ground storage tanks (ASTs), hydraulic fluids (elevators, lifts) and other visible hazardous materials connected to building systems.

## 3.0 GENERAL SITE CONDITIONS

The Site building is a 130,000 square foot (SF) single story building. Over time additions were added, listed below.

Original Building (1962): 76,150 SF  
1978 Addition: 6,250 SF  
1992 Addition: 38,600 SF  
2000 Modular Building: 1,650 SF  
2017 Maintenance Building: 2,950 SF  
2017 Concessions Building: 650 SF  
Barn: 3,100 SF  
Weight Room: 650 SF

The original building is brick face with CMU back-up. The windows and roof of the original building were replaced 5 years ago. The windows are double pane thermally efficient windows, and the roof is a white PVC roof. The 1978 addition appears similar to the original building. The columns and the exterior walls are supported on reinforced concrete foundations. The first floor is concrete slab-on-grade.

The 1992 addition is brick face with metal stud back-up with acoustical insulation. The windows and roof are original to the 1992 addition. The windows are aluminum frame type, double pane insulated windows. The roof is a black EPDM.

The 1962 building has a pneumatic controlled HVAC system. The 1992 addition has a separate electrically controlled system. All rooftop units are gas fired and controlled by Honeywell TH8000



series programmable thermostats. The science wing had a new roof top unit installed during the 2011 roof and window renovation. The school is equipped with a 1990 Weil McLain dual fire burner/boiler and three 2016 Camco 3,000 MBH gas-fired high efficiency condensing boilers. The 1962 H.B. Smith boiler was replaced in early 2016.

The 1962 building has terrazzo hallway floors with polished brick walls and plastered ceilings with "popcorn" finish. The classrooms and offices in this area are split with carpet, vinyl composition tile (VCT) and asbestos floor tiles. In 2019-2020 the asbestos tiles were covered with new VCT tiles. The hallway and classroom floors in the 1978 addition are VCT and walls are painted cinder block. This addition has become a science wing. The 1992 addition flooring is split between VCT and concrete floors. The hallway walls are tiled, and the shops and related room walls are sheet rock. In 2018 the flooring was replaced in the library, main office and student services office with luxury vinyl tile (LVT). The Automotive shop has remained the same since it was built in 1962.

The lobby entrance contains brick and CMU walls. The vocational shops have concrete floors and painted and glazed CMU walls. The ceilings in the shops are exposed roof deck. Academic classrooms are gypsum wallboard or plaster with plaster ceilings. Science classrooms contain 12"x12" VCT flooring that was recently replaced and 2'x4' suspended ceiling tiles. There is some wood paneling on some of the walls. Science classrooms walls are painted CMU block. The gym walls are glazed and painted CMU with a wood floor. The locker rooms are glazed and painted CMU block with concrete floors. Walls at the entrance to the cafeteria are brick and some gypsum wallboard. The cafeteria floor contains 12" x 12" VCT floor that was replaced during the 1990's addition. The ceiling in the cafeteria is a plaster ceiling with some 1'x1' panels adhered to the plaster ceiling. The Kitchen walls are glazed CMU, the floor is quarry tile and the ceiling in the kitchen has washable 2'x2' suspended ceiling tiles.

## **4.0 VISUAL ASBESTOS SURVEY**

### **4.1 Report Review**

The Vertex Companies, Inc. (VERTEX) conducted a 3-Year Re-inspection on April 18, 2017 as required by the 40 CFR 763 Asbestos Hazard Emergency Response Act (AHERA) at the South Shore Regional Vocational Technical High School located at 476 Webster Street in Hanover, Massachusetts. CDW reviewed the Three Year AHERA Re-Inspection Report, prepared by Vertex Environmental in April 2017. The results are provided in the below tables.





APRIL 2017			
Sample Number	Sample Description	Sample Location	Asbestos Content
B-0421-1A	2' x 4' Ceiling Tile (Speckled/Dot)	Guidance Office	None Detected
B-0421-1B	2' x 4' Ceiling Tile (Speckled/Dot)	Girls Locker Room	None Detected
B-0421-2A	2' x 2' Ceiling Tile (Rough/Dot)	Gym Office	None Detected
B-0421-2B	2' x 2' Ceiling Tile (Rough/Dot)	Girls Locker Room	None Detected
B-0421-3A	2' x 4' Ceiling Tile (Rough/Dot)	Room 203	None Detected
B-0421-3B	2' x 4' Ceiling Tile (Rough/Dot)	Room 205	None Detected
B-0421-4A	2' x 4' Ceiling Tile (Fissure/Dot)	Room 206	None Detected
B-0421-4B	2' x 4' Ceiling Tile (Fissure/Dot)	Room 207	None Detected
B-0421-5A	2' x 2' Ceiling Tile (Speckled/Dot)	Blue Room	None Detected
B-0421-5B	2' x 2' Ceiling Tile (Speckled/Dot)	Blue Room	None Detected
<b>B-0421-6A</b>	<b>Wood Floor Black Mastic</b>	<b>Room 112</b>	<b>2 % Chrysotile</b>
<b>B-0421-6B</b>	<b>Wood Floor Black Mastic</b>	<b>Room 112</b>	<b>Positive Stop</b>
B-0421-7A	Wood Floor Cloth Paper	Room 112	None Detected
B-0421-7B	Wood Floor Cloth Paper	Room 112	None Detected

JULY 2016			
Sample Number	Sample Description	Sample Location	Asbestos Content
<b>B-722-01A</b>	<b>Pipe Fitting Insulation</b>	<b>Boys Locker Room</b>	<b>25 %Amosite 10% Chrysotile</b>
<b>B-722-01B</b>	<b>Pipe Fitting Insulation</b>	<b>Boys Locker Room</b>	<b>Positive Stop</b>
<b>B-722-01C</b>	<b>Pipe Fitting Insulation</b>	<b>Boys Locker Room</b>	<b>Positive Stop</b>



<b>OCTOBER 2016</b>			
<b>Sample Number</b>	<b>Sample Description</b>	<b>Sample Location</b>	<b>Asbestos Content</b>
B-1002-01A	Boiler Insulation Wrap	Boiler Room	None Detected
B-1002-01B	Boiler Insulation Wrap	Boiler Room	None Detected
B-1002-01C	Boiler Insulation Wrap	Boiler Room	None Detected
B-1002-02A	Fire Brick	Boiler Room	None Detected
B-1002-02B	Fire Brick	Boiler Room	None Detected
B-1002-03A	12" x 12" Wall Tile; Dotted	Hallway	None Detected
B-1002-03B	12" x 12" Wall Tile; Dotted	Hallway	None Detected
B-1002-04A	Plaster Skim Coat	Room 113	None Detected
B-1002-04B	Plaster Skim Coat	Room 126- Automotive	None Detected
B-1002-04C	Plaster Skim Coat	Library	None Detected
B-1002-04D	Plaster Skim Coat	Guidance Office	None Detected
B-1002-04E	Plaster Skim Coat	Electrical Room	Not Analyzed
B-1002-04F	Plaster Skim Coat	Boiler Room	Not Analyzed
B-1002-04G	Plaster Skim Coat	Hallway	None Detected
B-1002-05A	Plaster Base Coat	Room 113	None Detected
B-1002-05B	Plaster Base Coat	Room 126- Automotive	None Detected
B-1002-05C	Plaster Base Coat	Library	None Detected
B-1002-05D	Plaster Base Coat	Guidance Office	None Detected
<b><i>B-1002-05E</i></b>	<b><i>Plaster Base Coat</i></b>	<b><i>Electrical Room</i></b>	<b><i>Trace &lt;1% Chrysotile</i></b>
<b><i>B-1002-05F</i></b>	<b><i>Plaster Base Coat</i></b>	<b><i>Boiler Room</i></b>	<b><i>Trace &lt;1% Chrysotile</i></b>
B-1002-05G	Plaster Base Coat	Hallway	None Detected



NOVEMBER 2016			
Sample Number	Sample Description	Sample Location	Asbestos Content
B-1103-01A	2' x 4' Ceiling Tile	Room 118	None Detected
B-1103-01B	2' x 4' Ceiling Tile	Room 118	None Detected
<b>B-1103-02A</b>	<b>Room Drain Insulation Material</b>	<b>Room 112</b>	<b>35 % Chrysotile</b>
<b>B-1103-02B</b>	<b>Room Drain Insulation Material</b>	<b>Room 110</b>	<b>Positive Stop</b>
<b>B-1103-02C</b>	<b>Room Drain Insulation Material</b>	<b>Room 110</b>	<b>Positive Stop</b>

#### 4.2 Methods

The investigative work for the asbestos survey included conducting a visual inspection of physically accessible areas of the structure, reviewing the AHERA Report and communicating with the facilities director. Once the inspection was completed, the building components were categorized into homogeneous areas. A homogenous area is an area that is similar in color, texture and date of application. These homogeneous areas included: surfacing materials, thermal system insulation, and miscellaneous materials. CDW did not collect any samples for laboratory analysis.

#### 4.2 Findings

A list of CDW's visual inspection of suspect ACM, quantities, and estimated costs to abate are provided in the below table. Though some of the items listed below are likely not ACM containing, they are assumed ACM until samples are collected for laboratory analysis to determine otherwise.

Material	Location	Quantity	Unit Price	Total Price
12"x12" Floor Tile and Mastic, Various Colors	Gym Hall, Storage, Office. Teachers Room, Cafeteria, Rooms 206, 206A, 207, 205, 201, 202, 203, 204, 124, IT, 122, 116, 115, 113, 111, 109, 105	12,900 SF	\$5	\$64,500
9"x9" Floor Tile and Mastic, various colors	Rooms 101, 103, 104, 109, 111, 113, 115, 116, 117, 119, 124, 126, Nurse's Office, Ball	10,500 SF	\$5	\$52,500





Material	Location	Quantity	Unit Price	Total Price
	Storage Room, Boy's Locker Room, Encapsulated in Other Areas			
Glue Daubs on 12"x12" Pin Dot Wall Tiles	Rooms 103, 104, 105, 109, 113, 115, 116, 117, 124, Nurse's Office, Library, Guidance, Cafeteria, main hall Near Lobby	7,550 SF	\$8	\$60,400
Slate Boards, White Boards and Tack Boards with Glue Daubs	Classrooms, Some Halls and Offices	190 Each	\$150	\$28,500
Beadboard Glue	Located in 10 Classrooms	800 SF	\$12	\$9,600
Wood Floor Adhesive	Room 110 and 112	6,300 SF	\$8	\$50,400
Ceiling Plaster	Boiler Room, Generator Room and Electrical Room	2,500 SF	\$12	\$30,000
Vinyl Cove Base Glue	1960s and 1970s Wing	4,000 LF	\$8	\$32,000
Gaskets	On Piping at Valves, Connections, Boiler Rooms, Mechanical Rooms, Some Above Ceilings in Corridors, 1960s and 1970s Wing	250 Each	\$100	\$25,000
Pipe Insulation Including Fittings	Boiler Room, Mechanical Rooms, Wet Walls, Above Ceilings	15,000 LF Unknown, based on Similar Sized Areas	\$18	\$270,000
Pipe Insulation Fittings on Fiberglass Insulated Pipe	Boiler Room, Mechanical Rooms, Wet Walls, Above Ceilings, Storage, Janitor Closets	500 Each	\$18	\$9,000
Roof Drain Insulation	Rooms 110, 112, 114-118, 123, 125, Loading Dock	65 Each	\$25	\$1,625



Material	Location	Quantity	Unit Price	Total Price
Flex Connectors	Older HVAC Equipment, Gym, Automotive Shop, Above Fixed Ceilings	25 Each	\$100	\$2,500
Fire Doors	Boiler Room, Electric Rooms, Generator Room, Vault	4 Each	\$300	\$1,200
Mastic Under Wood Gym Floor	Gym	7,500 SF	\$12	\$90,000
Transite Arc Panels in Old Switchgear	Electric Room	Each Switch Contains Approximately 10 Panels 6"x3" (120 Total)	\$5 Per Panel	\$600
Doors with Window Glaze	Classrooms, Offices, Etc. 1960s and 1970s Wing	40 Each	\$175	7,000
Interior Window Glaze	Offices, Admin, Kitchen, Classrooms 1960s and 1970s Wing Ave. 4'x4'	120 Each	\$150	\$18,000
Door Assembly Glaze Including Sidelights	Hallways	12 Each	\$200	\$2,400
Acoustical Pad Glue	Library/Auditorium Combo	20 Each (8'x4)	\$50	\$1,000
Walk In Refrigerator and Freezers (Mastic)	Kitchen and Student Kitchen	4 Each	\$1,200	4,800
Exterior Door Caulk Inc.	Exterior	250 LF	\$14	\$3,500
Control Joints	Exterior	300 LF	\$14	\$4,200
Remnant Window Caulk (Possibly left in Place before Window Replacements	Exterior	5,000 LF	\$14	\$70,000
Remnant Roofing Materials- Patches Etc.	Roofs-All	8,000 SF	\$12	\$96,000



Material	Location	Quantity	Unit Price	Total Price
Waterproofing	Slab Foundation, Basement Under Science	12,500 SF	\$12	\$150,000
Vapor Barrier Behind Brick Facade	1960s and 1970s Wing	12,000 SF	\$12	\$144,000
<b>TOTAL</b>				<b>\$1,228,725</b>

SF=Square Feet  
LF=Linear Foot

#### 4.4 Recommendations

CDW recommends conducting a comprehensive survey to collect samples of all suspect ACM listed above, as well as any other encountered during the asbestos survey. The comprehensive asbestos survey should include limited destructive sampling of the roof, behind exterior façade, investigating behind wet walls and under gym floors. An inspection is required by the United States Environmental Protection Agency (USEPA) Title 40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation and Massachusetts Department of Environmental Protection (MassDEP) Regulation 310 CMR 7.15. These regulations require that buildings be inspected for ACM prior to renovations and demolitions.

#### 5.0 LEAD-BASED PAINT

##### 5.1 Methods

CDW performed a visual inspection of painted surfaces for suspect lead-based paint (LBP). CDW did not collect any samples. According to school officials, there is an ongoing window lead paint abatement project that is occurring in phases.

##### 5.2 Findings

CDW observed peeling paint on exterior windows and doors, on interior plaster ceilings and steel beams. Stair rails also contain suspect LBP. CDW recommends conducting a comprehensive LBP survey consisting of collecting samples for laboratory analysis to determine lead content prior to renovations and demolition.

Renovation or demolition activities that disturb surfaces that contain lead must be conducted in accordance with the OSHA regulation 29 CFR 1926.62 “Lead Exposure in Construction: Interim Final Rule.” This regulation requires that a site-specific health and safety plan be prepared before conducting activities that create airborne lead emissions. In addition to the worker protection





requirements stipulated by OSHA, MassDEP and the USEPA regulate the disposal of wastes that are potentially hazardous. Such wastes may include paint chips and residue generated during abatement or repainting work, or whole components, such as wood windows, doors, and trim that are coated with LBP and that are disposed of as the result of renovation or demolition work.

Estimated costs for full abatement compared to recycle are provided in below table:

Abatement Cost	\$350,000
Recycle-TCLP-T&D Cost	\$180,000

## 6.0 HAZARDOUS MATERIALS SURVEY

### 6.1 Methods

#### OHM Visual Inspection

CDW visually inspected the Site building for universal, special and hazardous wastes associated with building materials. These included but were not limited to the following:

- Mercury-containing devices (fluorescent light tubes, thermostats, gauges, etc.);
- Polychlorinated bi-phenyl (PCB)-containing articles, equipment and devices (light ballasts, electrical switches, etc.);
- Chlorofluorocarbon (CFC)-containing equipment (refrigerants, air conditioners/HVAC equipment, water bubblers, etc.)
- Tritium-containing devices (Exit signs);
- Lead-Acid batteries (emergency lights, etc.); and
- Pressurized-cylinders (fire extinguishers, etc.).

### 6.2 Findings

#### OHM

The visual survey for hazardous materials identified mercury-containing light tubes, electronic ballasts, mercury containing thermostats and switches, lead and tritium batteries, hydraulic fluids, science chemicals, gas cylinders, oils, drums of waste oil, underground fuel tank, transformers, refrigerants, and other hazardous materials. No hazardous materials sampling or analysis was conducted as part of this preliminary survey. A list of OHMs identified are included in the below tables.

A list of estimated costs to dispose of OHM listed in above tables are provided below.



<b>Material Description</b>	<b>Est. Quantity</b>	<b>Units</b>	<b>Unit Cost</b>	<b>Total</b>
Fluorescent Bulbs (Inc. Used in Storage)	3,500	Each	\$2	\$7,000
Electronic Ballasts	2,000	Each	\$35	\$70,000
Exit Signs (Batteries)	60	Each	\$35	\$2,100
Batteries in Generator Room	10	Each	Re-Use	\$0
Older Door Retractors (Oils)	32	Each	\$50	\$1,600
55-Gallon Drums of Used Oils, Filters, Etc. Automotive, Maintenance Shed	20	Each	\$350	\$7,000
Used Paint Cans	50	Each	\$10	\$500
Hydraulic Fluid (Automotive) Subsurface - Unknown	100	Gallons	\$25	\$2,500
Grease Traps	50	Gallons	\$20	\$1,000
Refrigerants from Freezers/Refrigerators in Kitchen and Culinary	250	Gallons	\$35	\$8,750
Refrigerants from HVAC System in Mechanical Room and Chiller in Electrical Room	500	Gallons	\$35	\$17,500
Window Air Conditioner Units (Sporadic)	25	Each	\$35	\$875
Oil Filled Gauges (Boiler Room)	112	Each	\$25	\$2,800
Lead Pack in Galvanized Steel Pipe Connections	50	Each	\$150	\$7,500



Material Description	Est. Quantity	Units	Unit Cost	Total
(Mechanical Room)				
Welding Gases	Unknown	--	Re-Use	\$0
1,000-Gallon Tank to Collect Fertilizers from Greenhouse	1	Each	\$5,000	\$5,000
1,000-Gallon Holding Tank for Automotive Floor Drains	1	Each	\$5,000	\$5,000
2,500-Gallon Holding Tank for Cosmetology School Discharges	1	Each	\$10,000	\$10,000
Acid Neutralization Tank for Science Rooms	2 (15 Gallon)	Each	\$15,000	\$15,000
<b>TOTAL</b>				<b>\$164,125</b>

### 6.3 Recommendations

Prior to removal, light tubes, ballasts, compact florescent bulbs, lead and tritium batteries, switches will require proper handling, removal, transportation and off-site recycling/reclamation. Hydraulic oil from the automotive shop and refrigerants will require handling and disposal in accordance with state and federal regulations. Laboratory chemicals, gas cylinders, and other reusable items should be properly stored, in their original containers, and are recommended for re-use.

#### Limitations

The conclusions are limited to the information available at the time of the field survey and the scope of services, as defined. No subsurface soil or groundwater sampling and analysis was performed. Where access to portions of the Site or to structures on the site was unavailable or limited, CDW renders no opinion as to the presence of hazardous material or the presence of indirect evidence related to hazardous material in that portion of the site or structure. A through, destructive survey cannot occur until the building is vacant. This report cannot be relied upon solely for renovation or demolition. The testing performed forms the basis for conclusions expressed and areas inaccessible for testing limits those conclusions. No other conclusions, interpretations or recommendations are contained or implied in this report other than those expressed. While CDW followed industry standards during the inspection, we do not warrant that all suspect hazardous building materials were identified in or on the buildings and shall not be held liable related to future abatement costs related to hazardous materials that are either not discovered





or not appropriately characterized. This is due in part to inherent problems with every building inspection, such as, but not limited to:

- Seemingly homogeneous materials that are not in fact homogeneous;
- Seemingly representative locations that are not in fact representative;
- Layered materials that are not uniformly present or are isolated;
- Materials that are present and accessible but were not considered to be hazardous,
- Materials that are present in an isolated and limited quantity; and
- Material that is present in locations that are unsafe or otherwise difficult to access.

Client acknowledges that CDW's inspection is limited, and all hazardous materials may only become apparent during future renovation or demolition. During future renovation/demolition work, it is likely that additional hazardous materials or materials suspected of being hazardous will be identified. Such materials should be assumed to be hazardous unless appropriate evaluation or sampling and analysis demonstrate otherwise. No other use of this report is warranted without the written consent of CDW Consultants, Inc.

CDW appreciates the opportunity to provide our services to you on this project.

DRAFT







**South Shore Regional Voc Tech HS  
476 Webster Street**

Hanover, MA

**PDP Estimate - Base Repair Option  
10/05/2023**

**DRA**

260 Charles Street, Suite 300  
Waltham, MA 20453



98 N Washington St, Suite 109  
Boston MA 02114



**BASIS OF ESTIMATE**

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**PDP Estimate - Base Repair Option**

**DOCUMENTATION**

This estimate was prepared based upon information provided by DRA.

**PROJECT OUTLINE**

- Deficiencies and improvements to the existing school facility
- Interior renovations and improvements in meeting current ADA and life safety requirements
- Exterior facade improvements to address water and air infiltration
- Site improvements to existing drives, parking areas, curbing, walks and landscaped areas to meet ADA requirements and improve overall conditions

83,130 GSF	1962 Original Building GSF
<u>38,675 GSF</u>	1992 Addition
121,805 GSF	Gross Square Foot

- 07/15/2026 - Estimated Bid Date
- 08/14/2026 - Estimated Construction Start Date
- 08/03/2030 - Estimated Construction Finish Date
- 49.00 - Construction Duration (Months)

**BASIS FOR PRICING**

This estimate reflects the estimated current construction value for the construction of this project and should not be construed as a prediction of a low bid. Prices are based on local prevailing wage construction costs at the time the estimate was prepared. Escalation to reflect costs at anticipated construction mid-point is included in the estimate.

Subcontractor's mark-ups have been included in each line item unit price.

**EXCLUSIONS**

- Relocations of existing utilities
- Removal, packing, storage of school furniture, equipment, school supplies

Temporary classrooms  
Loose FF&E  
Overall building permit  
Air monitoring and sampling





**PDP Estimate - Base Repair Option**

<b>COST SUMMARY</b>			<b>121,805 GSF</b>
<b>BASE REPAIR OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
<b>A SUBSTRUCTURE</b>		<b>1,140,000</b>	<b>9.36</b>
A10 Foundations	1,140,000		9.36
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>17,160,575</b>	<b>140.89</b>
B10 Superstructure	1,140,900		9.37
B20 Exterior Enclosure	8,765,500		71.96
B30 Roofing	7,254,175		59.56
<b>C INTERIORS</b>		<b>6,763,855</b>	<b>55.53</b>
C10 Interior Construction	3,043,850		24.99
C20 Stairs	25,600		0.21
C30 Interior Finishes	3,694,405		30.33
<b>D SERVICES</b>		<b>18,939,112</b>	<b>155.49</b>
D10 Conveying	-		-
D20 Plumbing	280,264		2.30
D30 HVAC	10,799,930		88.67
D40 Fire Protection	1,351,415		11.09
D50 Electrical	6,507,503		53.43
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>545,000</b>	<b>4.47</b>
E10 Equipment	245,000		2.01
E20 Furnishings	300,000		2.46
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>4,216,185</b>	<b>34.61</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	4,216,185		34.61
<b>G SITEWORK</b>		<b>4,485,975</b>	<b>36.83</b>



**South Shore Regional Voc Tech HS**  
Hanover, MA

10/05/2023

**PDP Estimate - Base Repair Option**

<b>COST SUMMARY</b>			<b>121,805 GSF</b>
<b>BASE REPAIR OPTION</b>			
		<b>Subtotal Trade</b>	<b>Total</b>
			<b>Cost/sf</b>
G10 Site Preparation		309,000	2.54
G20 Site Improvements		920,775	7.56
G30 Site Mechanical Utilities		2,696,200	22.14
G40 Site Electrical Utilities		560,000	4.60
G90 Other Site Construction		-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 53,250,702</b>	<b>53,250,702</b>
Modular Classrooms		10,000 GSF	5,500,000
Design Contingency	20.00%		10,651,000
Phasing/Scheduling Premium	1.69%		900,000
CM Contingency	2.50%		1,757,600
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>72,059,302</b>
General Conditions, CM	16.00%		11,530,000
General Requirements, CM	4.00%		2,883,000
Bonds	1.10%		793,000
Insurancess	1.00%		721,000
OH&P, CM	3.00%		2,162,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>90,148,302</b>
Escalation (Through 2030)	36.00%		32,454,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 122,602,302</b>
			<b>1,006.55</b>



South Shore Regional Voc Tech HS

Hanover, MA

10/05/2023

PDP Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
1	<b>A</b>	<b>SUBSTRUCTURE</b>					
2	<b>A10</b>	<b>FOUNDATIONS</b>					
3	A1010	Standard Foundations					
4		Repair existing brick masonry and minor cracks in foundation wall (original building)	1	LS	15,000.00	15,000	
5							
6		Sub Total : Standard Foundations				<b>15,000</b>	
7							
8	A1020	Special Foundations					
9		No work					
10							
11		Sub Total : Special Foundations				-	
12							
13	A1030	Slab On Grade					
14		Replacement slabs for underground plumbing work	25,000	sf	45.00	1,125,000	
15							
16		Sub Total : Slab On Grade				<b>1,125,000</b>	
17							
18	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
19	A2010	Basement Excavation					
20		No work this section					
21							
22		Sub Total : Basement Excavation				-	
23							
24	A2020	Basement Walls					
25		No work this section					
26							
27		Sub Total : Basement Walls				-	
28							
29		<b>SUBTOTAL FOR SUBSTRUCTURE</b>				<b>End of Trade</b>	<b>\$ 1,140,000</b>
30							
31	<b>B</b>	<b>SHELL</b>					
32	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
33	B1010	Floor Construction					
34		Rework existing conditions for new wall and openings layouts	400	cy	900.00	360,000	
35		Supplimental steel elements for new wall and openings layouts	100	tn	5,900.00	590,000	
36		Re-coat existing exposed steel columns at 1992 addition	43	EA	1,300.00	55,900	
37							
38		Sub Total : Floor Construction				<b>1,005,900</b>	
39							
40	B1020	Roof Construction					
41		Openings in extg roof structure for MEP systems	1	ls	45,000.00	45,000	
42		Repairs to extg roof structure based on field conditions	1	ls	90,000.00	90,000	
43							
44		Sub Total : Roof Construction				<b>135,000</b>	
45							



South Shore Regional Voc Tech HS

Hanover, MA

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PDP Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
46							
47	<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
48	B2010	Exterior Walls					
49		Façades					
50		Provide minor re-pointing at exterior original building	2,500	sf	\$ 80.00	200,000	
51		Exterior wall framing, insulation, AVB, GWB finish	30,300	sf	\$ 45.00	1,363,500	
52		Sealants/caulking exterior façade	1	ls	\$ 365,500.00	365,500	
53		Exterior wall, face finish materials	30,300	sf	\$ 115.00	3,484,500	
54							
55		Sub Total : Exterior Walls				<b>5,413,500</b>	
56							
57	B2020	Exterior windows					
58		Exterior windows	16,300	sf	\$ 190.00	3,097,000	
59		Sealants/caulking exterior façade	1	ls	\$ 146,200.00	146,200	
60							
61		Sub Total : Exterior windows				<b>3,243,200</b>	
62							
63	B2030	Exterior doors					
64		Exterior doors including frames and hardware					
65		Door upgrades, ADA compliant widths, exterior	6	ea	5,500.00	33,000	
66		Exterior entrances	1	ea	65,000.00	65,000	
67		Sealants/caulking exterior doors	1	ls	\$ 10,800.00	10,800	
68							
69		Sub Total : Exterior doors				<b>108,800</b>	
70							
71							
72	<b>B30</b>	<b>ROOFING</b>					
73	B3010	Roof Coverings					
74		Remove extg roofing system	121,805	sf	12.00	1,461,660	
75		New roofing insulation, coverboard, membrane	121,805	sf	43.00	5,237,615	
76		Roof blocking	1	ls	215,600.00	215,600	
77		Flashings/counterflashings	1	ls	70,000.00	70,000	
78		MEP systems penetrations flashings	1	ls	72,000.00	72,000	
79		Walk pads	1	ls	55,000.00	55,000	
80		Roof work, other	1	ls	142,300.00	142,300	
81							
82		Sub Total : Roof Coverings				<b>7,254,175</b>	
83							
84		<b><u>SUBTOTAL FOR SHELL</u></b>				<b>End of Trade</b>	<b>\$ 17,160,575</b>
85							
86							
87	<b>C</b>	<b>INTERIORS</b>					
88	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
89	C1010	Partitions, Rough Carpentry					
90		New partitions, GWB	40,000	sf	18.00	720,000	
91		New partitions, CMU	20,000	sf	27.00	540,000	
92		Rebuild/tie in walls from façade work	121,805	gsf	3.90	475,000	





South Shore Regional Voc Tech HS

Hanover, MA

10/05/2023

PDP Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
93	New wall construction for ADA compliance	121,805	gsf	1.85	225,000		
94	Patch extg partitions	121,805	gsf	1.64	200,000		
95	Patch extg partitions for new door and frame install	1	ls	82,700.00	82,700		
96	Rails at ramps, stairs, landings	1,500	lf	220.00	330,000		
97							
98	Sub Total : Partitions, Rough Carpentry				2,572,700		
99							
100							
101	C1020 Interior Doors						
102	Modify typical classroom entrances to make them accessible	20	ea	6,700.00	134,000		
103	Modify doors which do not have proper push/pull ADA clearance	30	ea	3,000.00	90,000		
104	Paint, door frames	50	ea	160.00	8,000		
105	Rework extg doors and hardware based on field conditions	1	ls	46,400.00	46,400		
106							
107	Sub Total : Interior Doors				278,400		
108							
109							
110	C1030 Specialties/Fittings						
111	Door signage, upgrade, interior	121,805	gsf	0.38	45,750		
112	Door signage, upgrade, exterior	121,805	gsf	0.12	15,000		
113	Provide modifications at toilets for accessibility (original building)	1	ls	60,000.00	60,000		
114	Provide minor adjustments at toilets for accessibility (1992 addition)	1	ls	72,000.00	72,000		
115							
116	Sub Total : Specialties/Fittings				192,750		
117							
118	C20 STAIRCASES						
119	C2010 Stair Construction						
120	Auditorium stage stair	2	ea	9,000.00	18,000		
121							
122	Sub Total : Stair Construction				18,000		
123							
124	C2020 Stair Finishes						
125	Auditorium stage stair finish	2	ea	3,800.00	7,600		
126							
127	Sub Total : Stair Finishes				7,600		
128							
129	C30 INTERIOR FINISHES						
130	C3010 Wall Finishes						
131	Provide acoustical treatment in existing cafeteria	3,000	sf	40.00	120,000		
132	Provide acoustical treatments in lecture hall	2,000	sf	40.00	80,000		
133	Paint, throughout all interior walls surfaces	577,000	sf	0.95	548,150		
134	In the kitchen enclose utilities and provide smooth washable finish	1	ls	70,000.00	70,000		
135							
136	Sub Total : Wall Finishes				818,150		
137							
138	C3020 Floor Finishes						
139	Install linoleum in classroom areas	11,800	sf	8.00	94,400		



South Shore Regional Voc Tech HS

Hanover, MA

10/05/2023

PDP Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
140		Replace VCT flooring in science classrooms and lab with linoleum	4,600	sf	9.00	41,400	
141		Replace existing wood floor in gymnasium with new wood athletic flooring	7,150	sf	18.00	128,700	
142		Replace existing wood floor in construction shop with new wood flooring	4,000	sf	18.00	72,000	
143		Remove existing quarry tile for in kitchen and replace with new quarry tile flooring	1,200	sf	44.00	52,800	
144		Install coved base flooring in kitchen	180	lf	35.00	6,300	
145		Provide epoxy flooring at both boys and girls locker rooms	3,400	sf	21.00	71,400	
146		Replace existing wood floor at construction shop	3,750	sf	19.00	71,250	
147		Replace extg flooring based on field conditions	40,000	sf	8.00	320,000	
148		Rubber base	1	ls	40,500.00	40,500	
149		Floor prep for new flooring	76,080	sf	4.00	304,320	
150							
151		Sub Total : Floor Finishes				1,203,070	
152							
153							
154	C3030	Ceiling Finishes					
155		Replace existing ACT in science wing with new 2x2 ACT panels	5,700	sf	13.00	74,100	
156		Replace existing plaster ceiling at cafeteria with new 2x2 ACT ceiling	3,330	sf	14.00	46,620	
157		Remove existing ceiling tiles in kitchen and replace with washable ceiling tiles	1,200	sf	17.00	20,400	
158		Replace existing ACT ceiling in girls locker room with 2x2 ACT ceiling	1,430	sf	14.00	20,020	
159		Remove plaster ceiling in the classrooms and replace with high NRC ACT panels	20,660	sf	14.00	289,240	
160		Remove plaster ceiling in the corridors and replace with high NRC ACT panels	11,800	sf	14.00	165,200	
161		Replace plaster ceiling at library with new 2x2 ACT ceiling	2,400	sf	14.00	33,600	
162		Replace plaster ceiling at guidance area with new 2x2 ACT ceiling	1,600	sf	14.00	22,400	
163		Remove existing ceiling tiles in the addition and replace with new high NRC ACT panels	18,500	sf	14.00	259,000	
164		Replace extg ACT for new MEPs	55,185	sf	13.00	717,405	
165		Paint, throughout all interior exposed clgs/soffits surfaces	18,000	sf	1.40	25,200	
166							
167		Sub Total : Ceiling Finishes				1,673,185	
168							
169		<b>SUBTOTAL FOR INTERIORS</b>				End of Trade	\$ 6,763,855
170							
171							
172	D	<b>SERVICES</b>					
173	D10	<b>Elevators &amp; Lifts</b>					
174		No work this section	1	ls	-	-	
175							
176		Sub Total : Elevators & Lifts				-	
177							
178	D20	<b>Plumbing</b>					
179		Remove and replace non-accessible plumbing sinks in shops areas	8	ea	3,000.00	24,000	
180		Upgrades to extg plumbng fixtures, ADA requirements	1	ls	171,000.00	171,000	
181		Plumbing trade requirements and coordinations	121,805	gsf	0.70	85,264	
182							



South Shore Regional Voc Tech HS

10/05/2023

Hanover, MA

PDP Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
183		<b>Sub Total : Plumbing</b>				<b>280,264</b>	
184							
185	<b>D30</b>	<b>HVAC</b>					
186		Demo and make safe for removals	121,805	gsf	2.00	243,610	
187		Upgrade the HVAC control system to a new electronic system	121,805	gsf	9.00	1,096,245	
188		Replace existing unit ventilators, cabinet heaters and finned tube radiation	121,805	gsf	14.00	1,705,270	
189		Provide new CO2 sensors and connect to building management system	121,805	gsf	0.75	91,354	
190		Replace distribution piping systems	121,805	gsf	11.00	1,339,855	
191		Replace exhaust hoods and fire suppression system	1	ls	45,000.00	45,000	
192		Replace make-up air plenum in kitchen	1	ls	30,000.00	30,000	
193		Upgrades/replacement of existing HVAC equipment, other	121,805	gsf	47.00	5,724,835	
194		Testing and balancing	121,805	gsf	1.30	158,347	
195		HVAC trade coordinations and misc work	121,805	gsf	3.00	365,415	
196							
197		<b>Sub Total : HVAC</b>				<b>10,799,930</b>	
198							
199	<b>D40</b>	<b>Fire Protection</b>					
200		<b>21000 Fire Protection</b>					
201		Add sprinkler to original building	83,130	sf	11.00	914,430	
202		Rework extg sprinkler in 1992 bldg	38,675	sf	5.00	193,375	
203		Fire Protection trade coordinations and misc work	121,805	gsf	2.00	243,610	
204							
205		<b>Sub Total : Fire Protection</b>				<b>1,351,415</b>	
206							
207	<b>D50</b>	<b>Electrical</b>					
208		Demo and make safe for removals	121,805	gsf	1.90	231,430	
209		Temporary lighting & power for construction	121,805	gsf	1.40	170,527	
210		Replace original buildings existing electrical infrastructure	121,805	gsf	18.00	2,192,490	
211		Upgrade interior lighting with new fixtures using LED technology	121,805	gsf	10.00	1,218,050	
212		Update lighting controls throughout the building to meet latest energy code requirements	121,805	gsf	4.00	487,220	
213		Occupancy sensors	121,805	gsf	0.90	109,625	
214		Provide additional security system components, such as cameras, to provide full building coverage	121,805	gsf	4.10	500,000	
215		Receptacles upgrade	121,805	gsf	0.82	100,000	
216		MEP power wiring for new systems	121,805	gsf	5.50	669,928	
217		Misc electrical upgrades based on extg conditions	121,805	gsf	3.90	475,000	
218		Electrical trade coordinations and misc work	121,805	gsf	2.90	353,235	
219							
220		<b>Sub Total : Electrical</b>				<b>6,507,503</b>	
221							
222		<b>SUBTOTAL FOR SERVICES</b>				<b>End of Trade</b>	<b>\$ 18,939,112</b>
223							
224							
225	<b>E</b>	<b>EQUIPMENT &amp; FURNISHINGS</b>					
226	<b>E10</b>	<b>Equipment</b>					
227	E1010	Commercial Equipment					



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PDP Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION				BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
228		Replace stainless steel tables in the kitchen	1	LS	20,000.00	20,000		
229								
230		<b>Sub Total : Commercial Equipment</b>				<b>20,000</b>		
231								
232	E1020	Institutional Equipment				-		
233		xx	1	ls	-	-		
234								
235		<b>Sub Total : Institutional Equipment</b>				-		
236								
237	E1030	Vehicular Equipment						
238		No work this section	1	ls	-	-		
239								
240		<b>Sub Total : Vehicular Equipment</b>				-		
241								
242	E1090	Other Equipment						
243		Vocational Shops, equipment upgrades for ADA	121,805	gsf	1.85	225,000		
244								
245		<b>Sub Total : Other Equipment</b>				<b>225,000</b>		
246								
247								
248	<b>E20</b>	<b>Furnishings</b>						
249	E2010	<b>Fixed Furnishings</b>						
250		Casework package, upgrades for ADA	121,805	gsf	2.46	300,000		
251								
252		<b>Sub Total : Fixed Furnishings</b>				<b>300,000</b>		
253	E2020	<b>Moveable Furnishings</b>						
254		By Owner						
255								
256		<b>Sub Total : Moveable Furnishings</b>				-		
257								
258		<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				<b>End of Trade</b>	<b>\$ 545,000</b>	
259								
260								
261	<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>						
262	<b>F10</b>	<b>Special Construction</b>						
263		Special Construction						
264		No work this section	1	ls	-	-		
265								
266		<b>Sub Total : Special Construction</b>				-		
267								
268								
269	<b>F20</b>	<b>Selective Building Demolition</b>						
270	F2010	<b>Building Elements Demolition</b>						
271		Building Demolition						
272		Exterior façade demolition	52,500	sf	13.00	682,500		
273		Interior demmolition required for new work	121,805	gsf	11.00	1,339,855		





South Shore Regional Voc Tech HS

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Hanover, MA

PDP Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
274		Temporary weather enclosure, exterior wall	52,500	sf	15.50	813,750	
275							
276		<b>Sub Total : Building Elements Demolition</b>				<b>2,836,105</b>	
277							
278	F2020	<b>Hazardous Components Abatement</b>					
279		Hazardous Components Abatement					
280		Building - hazmat removals, 1962 bldg	83,130	gsf	16.00	1,330,080	
281		Site - existing UG structures	1	ea	50,000.00	50,000	
282							
283		<b>Sub Total : Hazardous Components Abatement</b>				<b>1,380,080</b>	
284							
285		<b>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				<b>End of Trade</b>	<b>\$ 4,216,185</b>
286							
287	G	<b>SITWORK</b>					
288	G10	<b>Site Preparation</b>					
289		Demolition work for site improvements work, work limits	1	ls	234,000.00	234,000	
290		Protection measures within work zone	1	ls	75,000.00	75,000	
291							
292		<b>Sub Total : Site Preparation</b>				<b>309,000</b>	
293							
294	G20	<b>Site Improvements</b>					
295		ADA parking spaces compliance	3	ea	3,900.00	11,700	
296		Trash/compactor equipment pad	1	ls	13,300.00	13,300	
297		Ramp 01, ADA compliant	75	lf	325.00	24,375	
298		Ramp 02, ADA compliant	50	lf	325.00	16,250	
299		Ramp 03, ADA compliant	18	lf	325.00	5,850	
300		Ramp 04, ADA compliant	18	lf	325.00	5,850	
301		Ramp 05, ADA compliant	18	lf	325.00	5,850	
302		Bleachers, ADA compliant	1	ls	108,000.00	108,000	
303		Walks, concrete	4,200	lf	110.00	462,000	
304		Earthwork removals and prep work for site improvements	1	ls	96,000.00	96,000	
305		Misc site improvements based on extg site conditions	1	ls	93,600.00	93,600	
306		Site restoration for new work	1	ls	78,000.00	78,000	
307							
308		<b>Sub Total : Site Improvements</b>				<b>920,775</b>	
309							
310	G30	<b>Site Mechanical Utilities</b>					
311		<b>Site, Storm</b>					
312		On-site storm water management system	1	ls	500,000.00	500,000	
313		On-site, underground structures	1	ls	175,000.00	175,000	
314		On-site, underground piping	1	ls	550,000.00	550,000	
315		On-site, swales/vegetation construction, stormwater management	1	ls	150,000.00	150,000	
316							
317		<b>Site, Gas</b>					
318		Gas service line upgrade, excavation/backfill only	1	ls	22,800.00	22,800	
319						-	
320		<b>Site, Water</b>					
321		Site water service	800	lf	180.00	144,000	



South Shore Regional Voc Tech HS

Hanover, MA

10/05/2023

PDP Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
322		Site fire water service	800	lf	220.00	176,000	
323		Site fire water, hydrants and service loop piping	4,500	lf	180.00	810,000	
324						-	
325		<b>Site, Sewer</b>					
326		Provide repairs/upgrades to existing sewer system	1	ls	\$ 168,400.00	168,400	
327							
328		<b>Sub Total : Site Mechanical Utilities</b>				<b>2,696,200</b>	
329							
330	<b>G40</b>	<b>Site Electrical Utilities</b>					
331		Upgrades to existing electrical service	1	ls	560,000.00	560,000	
332							
333		<b>Sub Total : Site Electrical Utilities</b>				<b>560,000</b>	
334							
335	<b>G90</b>	<b>Other Site Construction</b>					
336		No work this section	1	ls	-	-	
337							
338		<b>Sub Total : Other Site Construction</b>				<b>-</b>	
339							
340		<b><u>SUBTOTAL FOR SITEWORK</u></b>				<b>End of Trade</b>	<b>\$ 4,485,975</b>



**South Shore Regional Vocational Technical HS  
476 Webster Street  
Hanover, MA**

**PSR Budget Estimate - Options**

**02/13/2024**

**Drummey Rosane Anderson, Inc.**  
260 Charles Street, Suite 300  
Waltham, MA 02453



98 N. Washington St. Boston, MA 02114  
(857) 233-4561



**PSR Estimate - Options Summary**

Option	Population	Area of New	Area of Reno	Total Area (GSF)	Construction Cost	Cost/GSF
Base Repair	645	0 GSF	121,805 GSF	121,805 GSF	\$ 81,233,802	\$ 666.92 /GSF
AR-2.0	645	84,200 GSF	117,500 GSF	201,700 GSF	\$ 181,315,036	\$ 898.93 /GSF
AR-01	805	123,210 GSF	112,100 GSF	235,310 GSF	\$ 201,736,019	\$ 857.32 /GSF
AR-01	900	141,890 GSF	112,100 GSF	253,990 GSF	\$ 213,212,217	\$ 839.45 /GSF
NC-1.0	750	230,650 GSF	0 GSF	230,650 GSF	\$ 213,307,202	\$ 924.81 /GSF
NC-2.0	805	237,175 GSF	0 GSF	237,175 GSF	\$ 218,356,592	\$ 920.66 /GSF
NC-2.0	900	256,350 GSF	0 GSF	256,350 GSF	\$ 225,773,835	\$ 880.72 /GSF
NC-2.1	805	240,360 GSF	0 GSF	240,360 GSF	\$ 224,946,731	\$ 935.87 /GSF
NC-2.1	900	259,520 GSF	0 GSF	259,520 GSF	\$ 232,893,004	\$ 897.40 /GSF
NC-3.0	950	275,200 GSF	0 GSF	275,200 GSF	\$ 245,394,459	\$ 891.69 /GSF



# South Shore Regional Voc Tech HS

02/13/2024

Hanover, MA

## PSR Estimate - Base Repair Option

COST SUMMARY				121,805 GSF
		BASE REPAIR OPTION		
		Subtotal Trade	Total	Cost/sf
<b>A</b>	<b>SUBSTRUCTURE</b>		<b>240,000</b>	<b>1.97</b>
	A10 Foundations	240,000		1.97
	A20 Basement Construction	-		-
<b>B</b>	<b>SHELL</b>		<b>17,160,575</b>	<b>140.89</b>
	B10 Superstructure	1,140,900		9.37
	B20 Exterior Enclosure	8,765,500		71.96
	B30 Roofing	7,254,175		59.56
<b>C</b>	<b>INTERIORS</b>		<b>6,763,855</b>	<b>55.53</b>
	C10 Interior Construction	3,043,850		24.99
	C20 Stairs	25,600		0.21
	C30 Interior Finishes	3,694,405		30.33
<b>D</b>	<b>SERVICES</b>		<b>18,939,112</b>	<b>155.49</b>
	D10 Conveying	-		-
	D20 Plumbing	280,264		2.30
	D30 HVAC	10,799,930		88.67
	D40 Fire Protection	1,351,415		11.09
	D50 Electrical	6,507,503		53.43
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>		<b>545,000</b>	<b>4.47</b>
	E10 Equipment	245,000		2.01
	E20 Furnishings	300,000		2.46
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>4,216,185</b>	<b>34.61</b>
	F10 Special Construction	-		-
	F20 Selective Building Demolition	4,216,185		34.61
<b>G</b>	<b>SITWORK</b>		<b>4,485,975</b>	<b>36.83</b>
	G10 Site Preparation	309,000		2.54
	G20 Site Improvements	920,775		7.56
	G30 Site Mechanical Utilities	2,696,200		22.14
	G40 Site Electrical Utilities	560,000		4.60
	G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>		<b>\$ 52,350,702</b>	<b>52,350,702</b>	<b>429.79</b>



**South Shore Regional Voc Tech HS**

02/13/2024

Hanover, MA

**PSR Estimate - Base Repair Option**

<b>COST SUMMARY</b>			<b>121,805 GSF</b>
<b>BASE REPAIR OPTION</b>			
		<b>Subtotal Trade</b>	<b>Total</b>
			<b>Cost/sf</b>
Design Contingency	20.00%		10,471,000
Phasing/Scheduling Premium	1.72%		900,000
CM Contingency	2.50%		1,593,100
Escalation (Through 2026)	9.00%		5,879,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>71,193,802</b>
General Conditions, CM	5.00%		3,560,000
General Requirements, CM	4.00%		2,848,000
Bonds	1.10%		784,000
Insurancess	1.00%		712,000
OH&P, CM	3.00%		2,136,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$</b>	<b>81,233,802</b>
			<b>666.92</b>



**PSR Estimate - Add/Reno Construction - Option AR-2.0 Courtyard**

<b>COST SUMMARY</b>		<b>Size</b>	<b>201,700 GSF</b>
	<b>Including</b>	<b>New</b>	<b>84,200 GSF</b>
		<b>Reno</b>	<b>117,500 GSF</b>
		<b>Population</b>	<b>645 Student</b>
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>5,506,410</b>	<b>27.30</b>
	A10 Foundations	5,506,410	27.30
	A20 Basement Construction	-	-
<b>B</b>	<b>SHELL</b>	<b>25,817,600</b>	<b>128.00</b>
	B10 Superstructure	8,673,100	43.00
	B20 Exterior Enclosure	10,891,800	54.00
	B30 Roofing	6,252,700	31.00
<b>C</b>	<b>INTERIORS</b>	<b>16,892,375</b>	<b>83.75</b>
	C10 Interior Construction	7,866,300	39.00
	C20 Stairs	776,545	3.85
	C30 Interior Finishes	8,249,530	40.90
<b>D</b>	<b>SERVICES</b>	<b>34,947,694</b>	<b>173.27</b>
	D10 Conveying	695,000	-
	D20 Plumbing	5,889,640	29.20
	D30 HVAC	16,301,394	80.82
	D40 Fire Protection	1,613,600	8.00
	D50 Electrical	10,448,060	51.80
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>5,579,022</b>	<b>27.66</b>
	E10 Equipment	3,818,445	18.93
	E20 Furnishings	2,713,100	13.45
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>4,469,670</b>	<b>22.16</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	4,469,670	22.16
<b>G</b>	<b>SITWORK</b>	<b>24,633,465</b>	<b>122.13</b>
	G10 Site Preparation	3,654,567	17.82
	G20 Site Improvements	8,288,044	41.30
	G30 Site Mechanical Utilities	10,435,700	51.74
	G40 Site Electrical Utilities	2,272,255	11.27
	G90 Other Site Construction	-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 117,846,236</b>	<b>117,846,236</b>
			<b>584.26</b>





**South Shore Regional Voc Tech HS**  
Hanover, MA

02/13/2024

**PSR Estimate - Add/Reno Construction - Option AR-2.0 Courtyard**

<b>COST SUMMARY</b>		<b>Size</b>	<b>201,700 GSF</b>
	<b>Including</b>	<b>New</b>	<b>84,200 GSF</b>
		<b>Reno</b>	<b>117,500 GSF</b>
		<b>Population</b>	<b>645 Student</b>
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
			-
Modular Classrooms		17,000 GSF	9,350,000
Design Contingency	12.00%		14,142,000
Phasing/Scheduling Premium	1.25%		1,770,000
CM Contingency	2.50%		3,577,800
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>146,686,036</b>	<b>727.25</b>
General Conditions, CM	4.75%		6,968,000
General Requirements, CM	4.50%		6,601,000
Bonds	1.10%		1,614,000
Insurancess	1.00%		1,467,000
OH&P, CM	2.50%		3,668,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>167,004,036</b>	<b>827.98</b>
Escalation (Through Q2 2026)	10.00%		14,311,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 181,315,036</b>	<b>898.93 /GSF</b>



**PSR Estimate - Add/Reno Construction - Option AR-01**

<b>COST SUMMARY</b>		<b>Size</b>	<b>235,310 GSF</b>
	<b>Including</b>	<b>New</b>	<b>123,210 GSF</b>
		<b>Reno</b>	<b>112,100 GSF</b>
		<b>Population</b>	<b>805 Student</b>
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>6,339,268</b>	<b>26.94</b>
	A10 Foundations	6,339,268	26.94
	A20 Basement Construction	-	-
<b>B</b>	<b>SHELL</b>	<b>29,861,822</b>	<b>126.90</b>
	B10 Superstructure	9,532,712	40.51
	B20 Exterior Enclosure	12,830,600	54.53
	B30 Roofing	7,498,510	31.87
<b>C</b>	<b>INTERIORS</b>	<b>19,522,651</b>	<b>82.97</b>
	C10 Interior Construction	9,130,557	38.80
	C20 Stairs	770,600	3.27
	C30 Interior Finishes	9,621,494	40.89
<b>D</b>	<b>SERVICES</b>	<b>40,681,797</b>	<b>172.89</b>
	D10 Conveying	695,000	2.95
	D20 Plumbing	6,871,052	29.20
	D30 HVAC	19,028,924	80.87
	D40 Fire Protection	1,882,480	8.00
	D50 Electrical	12,204,341	51.86
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>6,531,545</b>	<b>27.76</b>
	E10 Equipment	3,818,445	16.23
	E20 Furnishings	2,713,100	11.53
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>4,469,670</b>	<b>18.99</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	4,469,670	18.99
<b>G</b>	<b>SITWORK</b>	<b>24,650,566</b>	<b>104.76</b>
	G10 Site Preparation	3,654,567	15.53
	G20 Site Improvements	8,288,044	35.22
	G30 Site Mechanical Utilities	10,435,700	44.35
	G40 Site Electrical Utilities	2,272,255	9.66
	G90 Other Site Construction	-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 132,057,319</b>	<b>132,057,319</b>
			<b>561.21</b>



**PSR Estimate - Add/Reno Construction - Option AR-01**

<b>COST SUMMARY</b>		<b>Size</b>	<b>235,310 GSF</b>
	<b>Including</b>	<b>New</b>	<b>123,210 GSF</b>
		<b>Reno</b>	<b>112,100 GSF</b>
		<b>Population</b>	<b>805 Student</b>
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
Modular Classrooms	17,000 GSF	9,350,000	-
Design Contingency	12.00%	15,847,000	
Phasing/Scheduling Premium	1.25%	1,970,000	
CM Contingency	2.50%	3,980,700	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>163,205,019</b>	<b>693.57</b>
General Conditions, CM	4.75%	7,753,000	
General Requirements, CM	4.50%	7,345,000	
Bonds	1.10%	1,796,000	
Insurancess	1.00%	1,633,000	
OH&P, CM	2.50%	4,081,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>185,813,019</b>	<b>789.65</b>
Escalation (Through Q2 2026)	10.00%	15,923,000	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 201,736,019</b>	<b>857.32 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - Add/Reno Construction - Option AR-01

COST SUMMARY		Size	253,990 GSF
		Including	New
			Reno
		Population	
		900 Student	
ADD/RENO CONSTRUCTION OPTION			
Subtotal Trade		Total	Cost/sf
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>7,014,822</b>	<b>27.62</b>
	A10 Foundations	7,014,822	27.62
	A20 Basement Construction	-	-
			\$ -
<b>B</b>	<b>SHELL</b>	<b>32,674,663</b>	<b>128.65</b>
	B10 Superstructure	10,940,529	43.07
	B20 Exterior Enclosure	14,278,250	56.22
	B30 Roofing	7,455,884	29.36
<b>C</b>	<b>INTERIORS</b>	<b>21,308,440</b>	<b>83.89</b>
	C10 Interior Construction	10,201,104	40.16
	C20 Stairs	770,600	3.03
	C30 Interior Finishes	10,336,736	40.70
<b>D</b>	<b>SERVICES</b>	<b>43,833,113</b>	<b>172.58</b>
	D10 Conveying	695,000	2.74
	D20 Plumbing	7,416,508	29.20
	D30 HVAC	20,530,796	80.83
	D40 Fire Protection	2,031,920	8.00
	D50 Electrical	13,158,889	51.81
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>6,965,305</b>	<b>27.42</b>
	E10 Equipment	4,065,405	16.01
	E20 Furnishings	2,899,900	11.42
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>4,469,670</b>	<b>17.60</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	4,469,670	17.60
<b>G</b>	<b>SITWORK</b>	<b>23,781,103</b>	<b>93.63</b>
	G10 Site Preparation	3,637,149	14.32
	G20 Site Improvements	7,436,000	29.28
	G30 Site Mechanical Utilities	10,435,700	41.09
	G40 Site Electrical Utilities	2,272,255	8.95
	G90 Other Site Construction	-	-





## South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

### PSR Estimate - Add/Reno Construction - Option AR-01

COST SUMMARY		Size	253,990 GSF
		<b>Including</b>	
		<b>New</b>	141,890 GSF
		<b>Reno</b>	112,100 GSF
		<b>Population</b>	900 Student
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
<hr/>			
<b>TOTAL DIRECT COST</b>		\$ 140,047,117	140,047,117
			551.39
Modular Classrooms	17,000 GSF	9,350,000	-
Design Contingency	12.00%	16,806,000	
Phasing/Scheduling Premium	1.25%	2,080,000	
CM Contingency	2.50%	4,207,100	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>172,490,217</b>	<b>679.12</b>
General Conditions, CM	4.75%	8,194,000	
General Requirements, CM	4.50%	7,763,000	
Bonds	1.10%	1,898,000	
Insurancess	1.00%	1,725,000	
OH&P, CM	2.50%	4,313,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>196,383,217</b>	<b>773.19</b>
Escalation (Through Q2 2026)	10.00%	16,829,000	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 213,212,217</b>	<b>839.45 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-1.0 - Courtyard

COST SUMMARY		Size	230,650 GSF
		Population	750 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>11,786,215</b>	<b>51.10</b>
A10 Foundations	11,786,215		51.10
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>42,439,600</b>	<b>184.00</b>
B10 Superstructure	17,810,793		77.22
B20 Exterior Enclosure	19,420,730		84.20
B30 Roofing	5,208,077		22.58
<b>C INTERIORS</b>		<b>21,640,695</b>	<b>93.82</b>
C10 Interior Construction	11,347,980		49.20
C20 Stairs	813,000		3.52
C30 Interior Finishes	9,479,715		41.10
<b>D SERVICES</b>		<b>39,887,677</b>	<b>172.94</b>
D10 Conveying	695,000		3.01
D20 Plumbing	6,734,980		29.20
D30 HVAC	18,651,234		80.86
D40 Fire Protection	1,845,200		8.00
D50 Electrical	11,961,263		51.86
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>5,766,250</b>	<b>25.00</b>
E10 Equipment	2,998,450		13.00
E20 Furnishings	2,767,800		12.00
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>14.55</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		14.55
<b>G SITEWORK</b>		<b>26,362,435</b>	<b>114.30</b>
G10 Site Preparation	3,736,530		16.20
G20 Site Improvements	9,917,950		43.00
G30 Site Mechanical Utilities	10,435,700		45.24
G40 Site Electrical Utilities	2,272,255		9.85
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 151,238,502</b>	<b>151,238,502</b>	<b>655.71</b>



## South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

### PSR Estimate - New Construction - Option NC-1.0 - Courtyard

COST SUMMARY		Size	230,650 GSF
		Population	750 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Total	Cost/sf
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		18,149,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,234,700
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>173,622,202</b>
General Conditions, CM	4.50%		7,813,000
General Requirements, CM	4.00%		6,945,000
Bonds	1.10%		1,910,000
Insurancess	1.00%		1,737,000
OH&P, CM	2.50%		4,341,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>196,368,202</b>
Escalation (Through Q2 2026)	10.00%		16,939,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 213,307,202</b>
			<b>924.81 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	237,175 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>12,191,383</b>	<b>51.40</b>
	A10 Foundations	12,191,383	51.40
	A20 Basement Construction	-	-
<b>B</b>	<b>SHELL</b>	<b>43,308,318</b>	<b>182.60</b>
	B10 Superstructure	18,211,418	76.78
	B20 Exterior Enclosure	19,773,850	83.37
	B30 Roofing	5,323,050	22.44
<b>C</b>	<b>INTERIORS</b>	<b>22,018,725</b>	<b>92.84</b>
	C10 Interior Construction	11,774,757	49.65
	C20 Stairs	813,000	3.43
	C30 Interior Finishes	9,430,968	39.76
<b>D</b>	<b>SERVICES</b>	<b>40,996,423</b>	<b>172.85</b>
	D10 Conveying	695,000	2.93
	D20 Plumbing	6,925,510	29.20
	D30 HVAC	19,178,870	80.86
	D40 Fire Protection	1,897,400	8.00
	D50 Electrical	12,299,643	51.86
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>6,567,913</b>	<b>27.69</b>
	E10 Equipment	3,836,163	13.00
	E20 Furnishings	2,731,750	11.52
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>3,355,630</b>	<b>14.15</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	3,355,630	14.15
<b>G</b>	<b>SITWORK</b>	<b>26,378,301</b>	<b>111.22</b>
	G10 Site Preparation	3,711,067	15.65
	G20 Site Improvements	9,959,279	41.99
	G30 Site Mechanical Utilities	10,435,700	44.00
	G40 Site Electrical Utilities	2,272,255	9.58
	G90 Other Site Construction	-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 154,816,692</b>	<b>154,816,692</b>
			<b>651.17</b>





# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	237,175 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Cost/sf	
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		18,579,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,334,900
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>177,730,592</b>
			<b>749.36</b>
General Conditions, CM	4.50%		7,998,000
General Requirements, CM	4.00%		7,110,000
Bonds	1.10%		1,956,000
Insurancess	1.00%		1,778,000
OH&P, CM	2.50%		4,444,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>201,016,592</b>
			<b>847.55</b>
Escalation (Through Q2 2026)	10.00%		17,340,000
			73.11
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 218,356,592</b>
			<b>920.66 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	256,350 GSF
		Population	900 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>11,876,461</b>	<b>46.33</b>
A10 Foundations	11,876,461		46.33
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>43,630,480</b>	<b>170.20</b>
B10 Superstructure	19,199,540		74.90
B20 Exterior Enclosure	18,888,080		73.68
B30 Roofing	5,542,860		21.62
<b>C INTERIORS</b>		<b>23,719,192</b>	<b>92.53</b>
C10 Interior Construction	12,724,035		49.64
C20 Stairs	813,000		3.17
C30 Interior Finishes	10,182,158		39.72
<b>D SERVICES</b>		<b>44,231,245</b>	<b>172.54</b>
D10 Conveying	695,000		2.71
D20 Plumbing	7,485,420		29.20
D30 HVAC	20,720,540		80.83
D40 Fire Protection	2,050,800		8.00
D50 Electrical	13,279,485		51.80
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>7,011,325</b>	<b>27.35</b>
E10 Equipment	4,087,825		13.00
E20 Furnishings	2,923,500		12.00
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>13.09</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		16.50
<b>G SITEWORK</b>		<b>26,252,301</b>	<b>102.41</b>
G10 Site Preparation	3,711,067		13.00
G20 Site Improvements	9,833,279		49.00
G30 Site Mechanical Utilities	10,435,700		50.00
G40 Site Electrical Utilities	2,272,255		1.90
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 160,076,635</b>	<b>160,076,635</b>	<b>630.72</b>



## South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

### PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	256,350 GSF	
		Population		900 Student
<b>NEW CONSTRUCTION OPTION</b>				
		Subtotal Trade	Total	Cost/sf
Modular Classrooms		0 GSF	-	
Design Contingency	12.00%		19,210,000	
Phasing/Scheduling Premium	0.00%		-	
CM Contingency	2.50%		4,482,200	
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>183,768,835</b>	<b>716.87</b>
General Conditions, CM	4.50%		8,270,000	
General Requirements, CM	4.00%		7,351,000	
Bonds	1.10%		2,022,000	
Insurancess	1.00%		1,838,000	
OH&P, CM	2.50%		4,595,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>207,844,835</b>	<b>810.79</b>
Escalation (Through Q2 2026)	10.00%		17,929,000	69.94
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 225,773,835</b>	<b>880.72 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	240,360 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>13,805,095</b>	<b>57.44</b>
A10 Foundations	13,805,095		57.44
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>45,522,772</b>	<b>189.39</b>
B10 Superstructure	19,195,597		79.86
B20 Exterior Enclosure	19,642,165		81.72
B30 Roofing	6,685,010		27.81
<b>C INTERIORS</b>		<b>22,391,381</b>	<b>93.16</b>
C10 Interior Construction	11,941,200		49.68
C20 Stairs	813,000		3.38
C30 Interior Finishes	9,637,181		40.09
<b>D SERVICES</b>		<b>41,533,732</b>	<b>172.80</b>
D10 Conveying	695,000		2.89
D20 Plumbing	7,018,512		29.20
D30 HVAC	19,434,944		80.86
D40 Fire Protection	1,922,880		8.00
D50 Electrical	12,462,396		51.85
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>6,630,020</b>	<b>27.58</b>
E10 Equipment	3,866,420		16.09
E20 Furnishings	2,763,600		11.50
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>13.96</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		-
<b>G SITEWORK</b>		<b>26,252,301</b>	<b>109.22</b>
G10 Site Preparation	3,711,067		14.00
G20 Site Improvements	9,833,279		52.00
G30 Site Mechanical Utilities	10,435,700		54.00
G40 Site Electrical Utilities	2,272,255		2.00
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 159,490,931</b>	<b>159,490,931</b>	<b>662.96</b>





## South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

### PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	240,360 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Total	Cost/sf
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		19,139,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,465,800
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>183,095,731</b>	<b>761.76</b>
General Conditions, CM	4.50%		8,240,000
General Requirements, CM	4.00%		7,324,000
Bonds	1.10%		2,015,000
Insurancess	1.00%		1,831,000
OH&P, CM	2.50%		4,578,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>207,083,731</b>	<b>861.56</b>
Escalation (Through Q2 2026)	10.00%		17,863,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 224,946,731</b>	<b>935.87 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	259,520 GSF
		Population	900 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>12,878,626</b>	<b>49.62</b>
	A10 Foundations	12,878,626	49.62
	A20 Basement Construction	-	-
<b>B</b>	<b>SHELL</b>	<b>46,755,083</b>	<b>180.16</b>
	B10 Superstructure	20,354,818	78.43
	B20 Exterior Enclosure	19,835,935	76.43
	B30 Roofing	6,564,330	25.29
<b>C</b>	<b>INTERIORS</b>	<b>24,043,698</b>	<b>92.65</b>
	C10 Interior Construction	12,887,376	49.66
	C20 Stairs	813,000	3.13
	C30 Interior Finishes	10,343,322	39.86
<b>D</b>	<b>SERVICES</b>	<b>44,766,024</b>	<b>172.50</b>
	D10 Conveying	695,000	2.68
	D20 Plumbing	7,577,984	29.20
	D30 HVAC	20,975,408	80.82
	D40 Fire Protection	2,076,160	8.00
	D50 Electrical	13,441,472	51.79
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>7,073,140</b>	<b>27.25</b>
	E10 Equipment	4,117,940	15.87
	E20 Furnishings	2,955,200	11.39
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>3,355,630</b>	<b>12.93</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	3,355,630	12.93
<b>G</b>	<b>SITWORK</b>	<b>26,252,301</b>	<b>101.16</b>
	G10 Site Preparation	3,711,067	14.30
	G20 Site Improvements	9,833,279	37.89
	G30 Site Mechanical Utilities	10,435,700	40.21
	G40 Site Electrical Utilities	2,272,255	8.76
	G90 Other Site Construction	-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 165,124,504</b>	<b>165,124,504</b>
			<b>636.27</b>



## South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

### PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	259,520 GSF
		Population	900 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Total	Cost/sf
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		19,815,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,623,500
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>189,563,004</b>	<b>730.44</b>
General Conditions, CM	4.50%		8,531,000
General Requirements, CM	4.00%		7,583,000
Bonds	1.10%		2,086,000
Insurancess	1.00%		1,896,000
OH&P, CM	2.50%		4,740,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>214,399,004</b>	<b>826.14</b>
Escalation (Through Q2 2026)	10.00%		18,494,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 232,893,004</b>	<b>897.40 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

## PSR Estimate - New Construction - Option NC-3.0 - Wings

COST SUMMARY		Size	275,200 GSF
		Population	975 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>13,594,880</b>	<b>49.40</b>
A10 Foundations	13,594,880		49.40
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>49,948,800</b>	<b>181.50</b>
B10 Superstructure	21,520,640		78.20
B20 Exterior Enclosure	21,438,080		77.90
B30 Roofing	6,990,080		25.40
<b>C INTERIORS</b>		<b>25,415,880</b>	<b>92.35</b>
C10 Interior Construction	13,649,920		49.60
C20 Stairs	813,000		2.95
C30 Interior Finishes	10,952,960		39.80
<b>D SERVICES</b>		<b>47,457,734</b>	<b>172.45</b>
D10 Conveying	695,000		2.53
D20 Plumbing	8,035,840		29.20
D30 HVAC	22,253,716		80.86
D40 Fire Protection	2,201,600		8.00
D50 Electrical	14,271,578		51.86
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>7,155,200</b>	<b>26.00</b>
E10 Equipment	3,852,800		14.00
E20 Furnishings	3,302,400		12.00
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>12.19</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		12.19
<b>G SITEWORK</b>		<b>27,059,635</b>	<b>98.33</b>
G10 Site Preparation	4,513,280		16.40
G20 Site Improvements	9,838,400		35.75
G30 Site Mechanical Utilities	10,435,700		37.92
G40 Site Electrical Utilities	2,272,255		8.26
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 173,987,759</b>	<b>173,987,759</b>	<b>632.22</b>





## South Shore Regional Voc Tech HS

Hanover, MA

02/13/2024

### PSR Estimate - New Construction - Option NC-3.0 - Wings

COST SUMMARY		Size	275,200 GSF
		Population	975 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Total	Cost/sf
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		20,879,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,871,700
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>199,738,459</b>	<b>725.79</b>
General Conditions, CM	4.50%		8,989,000
General Requirements, CM	4.00%		7,990,000
Bonds	1.10%		2,198,000
Insurancess	1.00%		1,998,000
OH&P, CM	2.50%		4,994,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>225,907,459</b>	<b>820.88</b>
Escalation (Through Q2 2026)	10.00%		19,487,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 245,394,459</b>	<b>891.69 /GSF</b>



**South Shore Regional Vocational Technical HS  
476 Webster Street  
Hanover, MA**

**PSR Budget Estimate - Options**

**01/18/2024**

**Drummey Rosane Anderson, Inc.**  
260 Charles Street, Suite 300  
Waltham, MA 02453



98 N. Washington St. Boston, MA 02114  
(857) 233-4561



PSR Estimate - Options Summary

Option	Population	Area of New	Area of Reno	Total Area (GSF)	Construction Cost	Cost/GSF
Base Repair	645	0 GSF	121,805 GSF	121,805 GSF	\$ 81,233,802	\$ 666.92 /GSF
AR-01	805	123,210 GSF	112,100 GSF	235,310 GSF	\$ 201,736,019	\$ 857.32 /GSF
AR-01	900	141,890 GSF	112,100 GSF	253,990 GSF	\$ 213,212,217	\$ 839.45 /GSF
NC-2.0	805	237,175 GSF	0 GSF	237,175 GSF	\$ 218,356,592	\$ 920.66 /GSF
NC-2.0	900	256,350 GSF	0 GSF	256,350 GSF	\$ 225,773,835	\$ 880.72 /GSF
NC-2.1	805	240,360 GSF	0 GSF	240,360 GSF	\$ 224,946,731	\$ 935.87 /GSF
NC-2.1	900	259,520 GSF	0 GSF	259,520 GSF	\$ 232,893,004	\$ 897.40 /GSF





## South Shore Regional Voc Tech HS

01/18/2024

Hanover, MA

### PSR Estimate - Base Repair Option

COST SUMMARY			121,805 GSF
BASE REPAIR OPTION			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>240,000</b>	<b>1.97</b>
A10 Foundations	240,000		1.97
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>17,160,575</b>	<b>140.89</b>
B10 Superstructure	1,140,900		9.37
B20 Exterior Enclosure	8,765,500		71.96
B30 Roofing	7,254,175		59.56
<b>C INTERIORS</b>		<b>6,763,855</b>	<b>55.53</b>
C10 Interior Construction	3,043,850		24.99
C20 Stairs	25,600		0.21
C30 Interior Finishes	3,694,405		30.33
<b>D SERVICES</b>		<b>18,939,112</b>	<b>155.49</b>
D10 Conveying	-		-
D20 Plumbing	280,264		2.30
D30 HVAC	10,799,930		88.67
D40 Fire Protection	1,351,415		11.09
D50 Electrical	6,507,503		53.43
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>545,000</b>	<b>4.47</b>
E10 Equipment	245,000		2.01
E20 Furnishings	300,000		2.46
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>4,216,185</b>	<b>34.61</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	4,216,185		34.61
<b>G SITEWORK</b>		<b>4,485,975</b>	<b>36.83</b>
G10 Site Preparation	309,000		2.54
G20 Site Improvements	920,775		7.56
G30 Site Mechanical Utilities	2,696,200		22.14
G40 Site Electrical Utilities	560,000		4.60
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 52,350,702</b>	<b>52,350,702</b>	<b>429.79</b>



**South Shore Regional Voc Tech HS**

01/18/2024

Hanover, MA

**PSR Estimate - Base Repair Option**

<b>COST SUMMARY</b>			<b>121,805 GSF</b>
<b>BASE REPAIR OPTION</b>			
		<b>Subtotal Trade</b>	<b>Total</b>
			<b>Cost/sf</b>
Design Contingency	20.00%		10,471,000
Phasing/Scheduling Premium	1.72%		900,000
CM Contingency	2.50%		1,593,100
Escalation (Through 2026)	9.00%		5,879,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>71,193,802</b>
General Conditions, CM	5.00%		3,560,000
General Requirements, CM	4.00%		2,848,000
Bonds	1.10%		784,000
Insurancess	1.00%		712,000
OH&P, CM	3.00%		2,136,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 81,233,802</b>
			<b>666.92</b>



**PSR Estimate - Add/Reno Construction - Option AR-01**

<b>COST SUMMARY</b>		<b>Size</b>	<b>235,310 GSF</b>
	<b>Including</b>	<b>New</b>	<b>123,210 GSF</b>
		<b>Reno</b>	<b>112,100 GSF</b>
		<b>Population</b>	<b>805 Student</b>
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>6,339,268</b>	<b>26.94</b>
	A10 Foundations	6,339,268	26.94
	A20 Basement Construction	-	-
<b>B</b>	<b>SHELL</b>	<b>29,861,822</b>	<b>126.90</b>
	B10 Superstructure	9,532,712	40.51
	B20 Exterior Enclosure	12,830,600	54.53
	B30 Roofing	7,498,510	31.87
<b>C</b>	<b>INTERIORS</b>	<b>19,522,651</b>	<b>82.97</b>
	C10 Interior Construction	9,130,557	38.80
	C20 Stairs	770,600	3.27
	C30 Interior Finishes	9,621,494	40.89
<b>D</b>	<b>SERVICES</b>	<b>40,681,797</b>	<b>172.89</b>
	D10 Conveying	695,000	2.95
	D20 Plumbing	6,871,052	29.20
	D30 HVAC	19,028,924	80.87
	D40 Fire Protection	1,882,480	8.00
	D50 Electrical	12,204,341	51.86
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>6,531,545</b>	<b>27.76</b>
	E10 Equipment	3,818,445	16.23
	E20 Furnishings	2,713,100	11.53
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>4,469,670</b>	<b>18.99</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	4,469,670	18.99
<b>G</b>	<b>SITWORK</b>	<b>24,650,566</b>	<b>104.76</b>
	G10 Site Preparation	3,654,567	15.53
	G20 Site Improvements	8,288,044	35.22
	G30 Site Mechanical Utilities	10,435,700	44.35
	G40 Site Electrical Utilities	2,272,255	9.66
	G90 Other Site Construction	-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 132,057,319</b>	<b>132,057,319</b>
			<b>561.21</b>



**PSR Estimate - Add/Reno Construction - Option AR-01**

<b>COST SUMMARY</b>		<b>Size</b>	<b>235,310 GSF</b>
	<b>Including</b>	<b>New</b>	<b>123,210 GSF</b>
		<b>Reno</b>	<b>112,100 GSF</b>
		<b>Population</b>	<b>805 Student</b>
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	<b>Subtotal Trade</b>	<b>Total</b>	<b>Cost/sf</b>
Modular Classrooms	17,000 GSF	9,350,000	-
Design Contingency	12.00%	15,847,000	
Phasing/Scheduling Premium	1.25%	1,970,000	
CM Contingency	2.50%	3,980,700	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>163,205,019</b>	<b>693.57</b>
General Conditions, CM	4.75%	7,753,000	
General Requirements, CM	4.50%	7,345,000	
Bonds	1.10%	1,796,000	
Insurancess	1.00%	1,633,000	
OH&P, CM	2.50%	4,081,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>185,813,019</b>	<b>789.65</b>
Escalation (Through Q2 2026)	10.00%	15,923,000	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 201,736,019</b>	<b>857.32 /GSF</b>





# South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

## PSR Estimate - Add/Reno Construction - Option AR-01

COST SUMMARY		Size	253,990 GSF
		Including	New
			Reno
		Population	
		900 Student	
<b>ADD/RENO CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
			Cost/sf
<b>A</b>	<b>SUBSTRUCTURE</b>		<b>7,014,822</b>
	A10 Foundations	7,014,822	27.62
	A20 Basement Construction	-	-
			\$ -
<b>B</b>	<b>SHELL</b>		<b>32,674,663</b>
	B10 Superstructure	10,940,529	43.07
	B20 Exterior Enclosure	14,278,250	56.22
	B30 Roofing	7,455,884	29.36
<b>C</b>	<b>INTERIORS</b>		<b>21,308,440</b>
	C10 Interior Construction	10,201,104	40.16
	C20 Stairs	770,600	3.03
	C30 Interior Finishes	10,336,736	40.70
<b>D</b>	<b>SERVICES</b>		<b>43,833,113</b>
	D10 Conveying	695,000	2.74
	D20 Plumbing	7,416,508	29.20
	D30 HVAC	20,530,796	80.83
	D40 Fire Protection	2,031,920	8.00
	D50 Electrical	13,158,889	51.81
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>		<b>6,965,305</b>
	E10 Equipment	4,065,405	16.01
	E20 Furnishings	2,899,900	11.42
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>4,469,670</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	4,469,670	17.60
<b>G</b>	<b>SITWORK</b>		<b>23,781,103</b>
	G10 Site Preparation	3,637,149	14.32
	G20 Site Improvements	7,436,000	29.28
	G30 Site Mechanical Utilities	10,435,700	41.09
	G40 Site Electrical Utilities	2,272,255	8.95
	G90 Other Site Construction	-	-



## South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

### PSR Estimate - Add/Reno Construction - Option AR-01

COST SUMMARY		Size	253,990 GSF
		Including New	141,890 GSF
		Reno	112,100 GSF
		Population	900 Student
<b>ADD/RENO CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<hr/>			
<b>TOTAL DIRECT COST</b>		<b>\$ 140,047,117</b>	<b>140,047,117</b>
			<b>551.39</b>
Modular Classrooms	17,000 GSF	9,350,000	-
Design Contingency	12.00%	16,806,000	
Phasing/Scheduling Premium	1.25%	2,080,000	
CM Contingency	2.50%	4,207,100	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>172,490,217</b>	<b>679.12</b>
General Conditions, CM	4.75%	8,194,000	
General Requirements, CM	4.50%	7,763,000	
Bonds	1.10%	1,898,000	
Insurancess	1.00%	1,725,000	
OH&P, CM	2.50%	4,313,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>196,383,217</b>	<b>773.19</b>
Escalation (Through Q2 2026)	10.00%	16,829,000	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 213,212,217</b>	<b>839.45 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

## PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	237,175 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A</b>	<b>SUBSTRUCTURE</b>	<b>12,191,383</b>	<b>51.40</b>
	A10 Foundations	12,191,383	51.40
	A20 Basement Construction	-	-
<b>B</b>	<b>SHELL</b>	<b>43,308,318</b>	<b>182.60</b>
	B10 Superstructure	18,211,418	76.78
	B20 Exterior Enclosure	19,773,850	83.37
	B30 Roofing	5,323,050	22.44
<b>C</b>	<b>INTERIORS</b>	<b>22,018,725</b>	<b>92.84</b>
	C10 Interior Construction	11,774,757	49.65
	C20 Stairs	813,000	3.43
	C30 Interior Finishes	9,430,968	39.76
<b>D</b>	<b>SERVICES</b>	<b>40,996,423</b>	<b>172.85</b>
	D10 Conveying	695,000	2.93
	D20 Plumbing	6,925,510	29.20
	D30 HVAC	19,178,870	80.86
	D40 Fire Protection	1,897,400	8.00
	D50 Electrical	12,299,643	51.86
<b>E</b>	<b>FITTINGS &amp; FIXED EQUIPMENT</b>	<b>6,567,913</b>	<b>27.69</b>
	E10 Equipment	3,836,163	16.17
	E20 Furnishings	2,731,750	11.52
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>	<b>3,355,630</b>	<b>14.15</b>
	F10 Special Construction	-	-
	F20 Selective Building Demolition	3,355,630	14.15
<b>G</b>	<b>SITWORK</b>	<b>26,378,301</b>	<b>111.22</b>
	G10 Site Preparation	3,711,067	15.65
	G20 Site Improvements	9,959,279	41.99
	G30 Site Mechanical Utilities	10,435,700	44.00
	G40 Site Electrical Utilities	2,272,255	9.58
	G90 Other Site Construction	-	-
<b>TOTAL DIRECT COST</b>		<b>\$ 154,816,692</b>	<b>154,816,692</b>
			<b>652.75</b>



## South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

### PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	237,175 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Total	Cost/sf
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		18,579,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,334,900
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>177,730,592</b>	<b>749.36</b>
General Conditions, CM	4.50%		7,998,000
General Requirements, CM	4.00%		7,110,000
Bonds	1.10%		1,956,000
Insurancess	1.00%		1,778,000
OH&P, CM	2.50%		4,444,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>201,016,592</b>	<b>847.55</b>
Escalation (Through Q2 2026)	10.00%		17,340,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 218,356,592</b>	<b>920.66 /GSF</b>





# South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

## PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	256,350 GSF
		Population	900 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>11,876,461</b>	<b>46.33</b>
A10 Foundations	11,876,461		46.33
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>43,630,480</b>	<b>170.20</b>
B10 Superstructure	19,199,540		74.90
B20 Exterior Enclosure	18,888,080		73.68
B30 Roofing	5,542,860		21.62
<b>C INTERIORS</b>		<b>23,719,192</b>	<b>92.53</b>
C10 Interior Construction	12,724,035		49.64
C20 Stairs	813,000		3.17
C30 Interior Finishes	10,182,158		39.72
<b>D SERVICES</b>		<b>44,231,245</b>	<b>172.54</b>
D10 Conveying	695,000		2.71
D20 Plumbing	7,485,420		29.20
D30 HVAC	20,720,540		80.83
D40 Fire Protection	2,050,800		8.00
D50 Electrical	13,279,485		51.80
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>7,011,325</b>	<b>27.35</b>
E10 Equipment	4,087,825		13.00
E20 Furnishings	2,923,500		12.00
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>13.09</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		16.50
<b>G SITEWORK</b>		<b>26,252,301</b>	<b>102.41</b>
G10 Site Preparation	3,711,067		13.00
G20 Site Improvements	9,833,279		49.00
G30 Site Mechanical Utilities	10,435,700		50.00
G40 Site Electrical Utilities	2,272,255		1.90
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 160,076,635</b>	<b>160,076,635</b>	<b>630.72</b>



## South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

### PSR Estimate - New Construction - Option NC-2.0

COST SUMMARY		Size	256,350 GSF	
		Population		900 Student
<b>NEW CONSTRUCTION OPTION</b>				
		Subtotal Trade	Total	Cost/sf
Modular Classrooms		0 GSF	-	
Design Contingency	12.00%		19,210,000	
Phasing/Scheduling Premium	0.00%		-	
CM Contingency	2.50%		4,482,200	
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>183,768,835</b>	<b>716.87</b>
General Conditions, CM	4.50%		8,270,000	
General Requirements, CM	4.00%		7,351,000	
Bonds	1.10%		2,022,000	
Insurancess	1.00%		1,838,000	
OH&P, CM	2.50%		4,595,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>207,844,835</b>	<b>810.79</b>
Escalation (Through Q2 2026)	10.00%		17,929,000	69.94
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 225,773,835</b>	<b>880.72 /GSF</b>



# South Shore Regional Voc Tech HS

Hanover, MA

01/18/2024

## PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	240,360 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>13,805,095</b>	<b>57.44</b>
A10 Foundations	13,805,095		57.44
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>45,522,772</b>	<b>189.39</b>
B10 Superstructure	19,195,597		79.86
B20 Exterior Enclosure	19,642,165		81.72
B30 Roofing	6,685,010		27.81
<b>C INTERIORS</b>		<b>22,391,381</b>	<b>93.16</b>
C10 Interior Construction	11,941,200		49.68
C20 Stairs	813,000		3.38
C30 Interior Finishes	9,637,181		40.09
<b>D SERVICES</b>		<b>41,533,732</b>	<b>172.80</b>
D10 Conveying	695,000		2.89
D20 Plumbing	7,018,512		29.20
D30 HVAC	19,434,944		80.86
D40 Fire Protection	1,922,880		8.00
D50 Electrical	12,462,396		51.85
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>6,630,020</b>	<b>27.58</b>
E10 Equipment	3,866,420		16.09
E20 Furnishings	2,763,600		11.50
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>13.96</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		-
<b>G SITEWORK</b>		<b>26,252,301</b>	<b>109.22</b>
G10 Site Preparation	3,711,067		14.00
G20 Site Improvements	9,833,279		52.00
G30 Site Mechanical Utilities	10,435,700		54.00
G40 Site Electrical Utilities	2,272,255		2.00
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 159,490,931</b>	<b>159,490,931</b>	<b>662.96</b>



## South Shore Regional Voc Tech HS

Hanover, MA

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### PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	240,360 GSF
		Population	805 Student
<b>NEW CONSTRUCTION OPTION</b>			
		Subtotal Trade	Total
		Total	Cost/sf
Modular Classrooms		0 GSF	-
Design Contingency	12.00%		19,139,000
Phasing/Scheduling Premium	0.00%		-
CM Contingency	2.50%		4,465,800
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>183,095,731</b>	<b>761.76</b>
General Conditions, CM	4.50%		8,240,000
General Requirements, CM	4.00%		7,324,000
Bonds	1.10%		2,015,000
Insurancess	1.00%		1,831,000
OH&P, CM	2.50%		4,578,000
<b>Subtotal - Direct Construction Cost + Contingencies</b>		<b>207,083,731</b>	<b>861.56</b>
Escalation (Through Q2 2026)	10.00%		17,863,000
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>\$ 224,946,731</b>	<b>935.87 /GSF</b>





# South Shore Regional Voc Tech HS

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## PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	259,520 GSF
		Population	900 Student
<b>NEW CONSTRUCTION OPTION</b>			
	Subtotal Trade	Total	Cost/sf
<b>A SUBSTRUCTURE</b>		<b>12,878,626</b>	<b>49.62</b>
A10 Foundations	12,878,626		49.62
A20 Basement Construction	-		-
<b>B SHELL</b>		<b>46,755,083</b>	<b>180.16</b>
B10 Superstructure	20,354,818		78.43
B20 Exterior Enclosure	19,835,935		76.43
B30 Roofing	6,564,330		25.29
<b>C INTERIORS</b>		<b>24,043,698</b>	<b>92.65</b>
C10 Interior Construction	12,887,376		49.66
C20 Stairs	813,000		3.13
C30 Interior Finishes	10,343,322		39.86
<b>D SERVICES</b>		<b>44,766,024</b>	<b>172.50</b>
D10 Conveying	695,000		2.68
D20 Plumbing	7,577,984		29.20
D30 HVAC	20,975,408		80.82
D40 Fire Protection	2,076,160		8.00
D50 Electrical	13,441,472		51.79
<b>E FITTINGS &amp; FIXED EQUIPMENT</b>		<b>7,073,140</b>	<b>27.25</b>
E10 Equipment	4,117,940		15.87
E20 Furnishings	2,955,200		11.39
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		<b>3,355,630</b>	<b>12.93</b>
F10 Special Construction	-		-
F20 Selective Building Demolition	3,355,630		12.93
<b>G SITEWORK</b>		<b>26,252,301</b>	<b>101.16</b>
G10 Site Preparation	3,711,067		14.30
G20 Site Improvements	9,833,279		37.89
G30 Site Mechanical Utilities	10,435,700		40.21
G40 Site Electrical Utilities	2,272,255		8.76
G90 Other Site Construction	-		-
<b>TOTAL DIRECT COST</b>	<b>\$ 165,124,504</b>	<b>165,124,504</b>	<b>636.27</b>



## South Shore Regional Voc Tech HS

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### PSR Estimate - New Construction - Option NC-2.1

COST SUMMARY		Size	259,520 GSF	
		Population		900 Student
<b>NEW CONSTRUCTION OPTION</b>				
		Subtotal Trade	Total	Cost/sf
Modular Classrooms		0 GSF	-	
Design Contingency	12.00%		19,815,000	
Phasing/Scheduling Premium	0.00%		-	
CM Contingency	2.50%		4,623,500	
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>189,563,004</b>	<b>730.44</b>
General Conditions, CM	4.50%		8,531,000	
General Requirements, CM	4.00%		7,583,000	
Bonds	1.10%		2,086,000	
Insurancess	1.00%		1,896,000	
OH&P, CM	2.50%		4,740,000	
<b>Subtotal - Direct Construction Cost + Contingencies</b>			<b>214,399,004</b>	<b>826.14</b>
Escalation (Through Q2 2026)	10.00%		18,494,000	71.26
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>			<b>\$ 232,893,004</b>	<b>897.40 /GSF</b>



BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
1	<b>A</b>	<b>SUBSTRUCTURE</b>					
2	<b>A10</b>	<b>FOUNDATIONS</b>					
3		A1010 Standard Foundations					
4		Repair existing brick masonry and minor cracks in foundation wall (original building)	1	LS	15,000.00	15,000	
5							
6		Sub Total : Standard Foundations				<b>15,000</b>	
7							
8		A1020 Special Foundations					
9		No work					
10							
11		Sub Total : Special Foundations				-	
12							
13		A1030 Slab On Grade					
14		Replacement slabs for underground plumbing work	5,000	sf	45.00	225,000	
15							
16		Sub Total : Slab On Grade				<b>225,000</b>	
17							
18	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
19		A2010 Basement Excavation					
20		No work this section					
21							
22		Sub Total : Basement Excavation				-	
23							
24		A2020 Basement Walls					
25		No work this section					
26							
27		Sub Total : Basement Walls				-	
28							
29		<b>SUBTOTAL FOR SUBSTRUCTURE</b>				<b>End of Trade</b>	<b>\$ 240,000</b>
30							
31	<b>B</b>	<b>SHELL</b>					
32	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
33		B1010 Floor Construction					
34		Rework existing conditions for new wall and openings layouts	400	cy	900.00	360,000	
35		Supplimental steel elements for new wall and openings layouts	100	tn	5,900.00	590,000	
36		Re-coat existing exposed steel columns at 1992 addition	43	EA	1,300.00	55,900	
37							
38		Sub Total : Floor Construction				<b>1,005,900</b>	
39							
40		B1020 Roof Construction					
41		Openings in extg roof structure for MEP systems	1	ls	45,000.00	45,000	
42		Repairs to extg roof structure based on field conditions	1	ls	90,000.00	90,000	
43							
44		Sub Total : Roof Construction				<b>135,000</b>	



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PSR Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
45							
46							
47	<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
48	B2010	Exterior Walls					
49		Façades					
50		Provide minor re-pointing at exterior original building	2,500	sf	\$ 80.00	200,000	
51		Exterior wall framing, insulation, AVB, GWB finish	30,300	sf	\$ 45.00	1,363,500	
52		Sealants/caulking exterior façade	1	ls	\$ 365,500.00	365,500	
53		Exterior wall, face finish materials	30,300	sf	\$ 115.00	3,484,500	
54							
55		Sub Total : Exterior Walls				<b>5,413,500</b>	
56							
57	B2020	Exterior windows					
58		Exterior windows	16,300	sf	\$ 190.00	3,097,000	
59		Sealants/caulking exterior façade	1	ls	\$ 146,200.00	146,200	
60							
61		Sub Total : Exterior windows				<b>3,243,200</b>	
62							
63	B2030	Exterior doors					
64		Exterior doors including frames and hardware					
65		Door upgrades, ADA compliant widths, exterior	6	ea	5,500.00	33,000	
66		Exterior entrances	1	ea	65,000.00	65,000	
67		Sealants/caulking exterior doors	1	ls	\$ 10,800.00	10,800	
68							
69		Sub Total : Exterior doors				<b>108,800</b>	
70							
71							
72	<b>B30</b>	<b>ROOFING</b>					
73	B3010	Roof Coverings					
74		Remove extg roofing system	121,805	sf	12.00	1,461,660	
75		New roofing insulation, coverboard, membrane	121,805	sf	43.00	5,237,615	
76		Roof blocking	1	ls	215,600.00	215,600	
77		Flashings/counterflashings	1	ls	70,000.00	70,000	
78		MEP systems penetrations flashings	1	ls	72,000.00	72,000	
79		Walk pads	1	ls	55,000.00	55,000	
80		Roof work, other	1	ls	142,300.00	142,300	
81							
82		Sub Total : Roof Coverings				<b>7,254,175</b>	
83							
84		<b>SUBTOTAL FOR SHELL</b>				<b>End of Trade \$ 17,160,575</b>	
85							
86							
87	<b>C</b>	<b>INTERIORS</b>					
88	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
89	C1010	Partitions, Rough Carpentry					
90		New partitions, GWB	40,000	sf	18.00	720,000	





South Shore Regional Voc Tech HS

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PSR Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
91	New partitions, CMU	20,000	sf	27.00	540,000		
92	Rebuild/tie in walls from façade work	121,805	gsf	3.90	475,000		
93	New wall construction for ADA compliance	121,805	gsf	1.85	225,000		
94	Patch extg partitions	121,805	gsf	1.64	200,000		
95	Patch extg partitions for new door and frame install	1	ls	82,700.00	82,700		
96	Rails at ramps, stairs, landings	1,500	lf	220.00	330,000		
97							
98	Sub Total : Partitions, Rough Carpentry				<b>2,572,700</b>		
99							
100							
101	C1020 Interior Doors						
102	Modify typical classroom entrances to make them accessible	20	ea	6,700.00	134,000		
103	Modify doors which do not have proper push/pull ADA clearance	30	ea	3,000.00	90,000		
104	Paint, door frames	50	ea	160.00	8,000		
105	Rework extg doors and hardware based on field conditions	1	ls	46,400.00	46,400		
106							
107	Sub Total : Interior Doors				<b>278,400</b>		
108							
109							
110	C1030 Specialties/Fittings						
111	Door signage, upgrade, interior	121,805	gsf	0.38	45,750		
112	Door signage, upgrade, exterior	121,805	gsf	0.12	15,000		
113	Provide modifications at toilets for accessibility (original building)	1	ls	60,000.00	60,000		
114	Provide minor adjustments at toilets for accessibility (1992 addition)	1	ls	72,000.00	72,000		
115							
116	Sub Total : Specialties/Fittings				<b>192,750</b>		
117							
118	C20 STAIRCASES						
119	C2010 Stair Construction						
120	Auditorium stage stair	2	ea	9,000.00	18,000		
121							
122	Sub Total : Stair Construction				<b>18,000</b>		
123							
124	C2020 Stair Finishes						
125	Auditorium stage stair finish	2	ea	3,800.00	7,600		
126							
127	Sub Total : Stair Finishes				<b>7,600</b>		
128							
129	C30 INTERIOR FINISHES						
130	C3010 Wall Finishes						
131	Provide acoustical treatment in existing cafeteria	3,000	sf	40.00	120,000		
132	Provide acoustical treatments in lecture hall	2,000	sf	40.00	80,000		
133	Paint, throughout all interior walls surfaces	577,000	sf	0.95	548,150		
134	In the kitchen enclose utilities and provide smooth washable finish	1	ls	70,000.00	70,000		
135							



South Shore Regional Voc Tech HS

Hanover, MA

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PSR Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
Sub Total : Wall Finishes						<b>818,150</b>	
C3020	Floor Finishes						
	11,800	sf	8.00	94,400			
	4,600	sf	9.00	41,400			
	7,150	sf	18.00	128,700			
	4,000	sf	18.00	72,000			
	1,200	sf	44.00	52,800			
	180	lf	35.00	6,300			
	3,400	sf	21.00	71,400			
	3,750	sf	19.00	71,250			
	40,000	sf	8.00	320,000			
	1	ls	40,500.00	40,500			
	76,080	sf	4.00	304,320			
Sub Total : Floor Finishes						<b>1,203,070</b>	
C3030	Ceiling Finishes						
	5,700	sf	13.00	74,100			
	3,330	sf	14.00	46,620			
	1,200	sf	17.00	20,400			
	1,430	sf	14.00	20,020			
	20,660	sf	14.00	289,240			
	11,800	sf	14.00	165,200			
	2,400	sf	14.00	33,600			
	1,600	sf	14.00	22,400			
	18,500	sf	14.00	259,000			
	55,185	sf	13.00	717,405			
	18,000	sf	1.40	25,200			
Sub Total : Ceiling Finishes						<b>1,673,185</b>	
<b>SUBTOTAL FOR INTERIORS</b>						<b>End of Trade</b>	<b>\$ 6,763,855</b>
D	<b>SERVICES</b>						
D10	<b>Elevators &amp; Lifts</b>						
	1	ls	-	-			
Sub Total : Elevators & Lifts						-	



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PSR Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
178	<b>D20</b>	<b>Plumbing</b>					
179		Remove and replace non-accessible plumbing sinks in shops areas	8	ea	3,000.00	24,000	
180		Upgrades to extg plumbing fixtures, ADA requirements	1	ls	171,000.00	171,000	
181		Plumbing trade requirements and coordinations	121,805	gsf	0.70	85,264	
182							
183		<b>Sub Total : Plumbing</b>				<b>280,264</b>	
184							
185	<b>D30</b>	<b>HVAC</b>					
186		Demo and make safe for removals	121,805	gsf	2.00	243,610	
187		Upgrade the HVAC control system to a new electronic system	121,805	gsf	9.00	1,096,245	
188		Replace existing unit ventilators, cabinet heaters and finned tube radiation	121,805	gsf	14.00	1,705,270	
189		Provide new CO2 sensors and connect to building management system	121,805	gsf	0.75	91,354	
190		Replace distribution piping systems	121,805	gsf	11.00	1,339,855	
191		Replace exhaust hoods and fire suppression system	1	ls	45,000.00	45,000	
192		Replace make-up air plenum in kitchen	1	ls	30,000.00	30,000	
193		Upgrades/replacement of existing HVAC equipment, other	121,805	gsf	47.00	5,724,835	
194		Testing and balancing	121,805	gsf	1.30	158,347	
195		HVAC trade coordinations and misc work	121,805	gsf	3.00	365,415	
196							
197		<b>Sub Total : HVAC</b>				<b>10,799,930</b>	
198							
199	<b>D40</b>	<b>Fire Protection</b>					
200		<b>21000 Fire Protection</b>					
201		Add sprinkler to original building	83,130	sf	11.00	914,430	
202		Rework extg sprinkler in 1992 bldg	38,675	sf	5.00	193,375	
203		Fire Protection trade coordinations and misc work	121,805	gsf	2.00	243,610	
204							
205		<b>Sub Total : Fire Protection</b>				<b>1,351,415</b>	
206							
207	<b>D50</b>	<b>Electrical</b>					
208		Demo and make safe for removals	121,805	gsf	1.90	231,430	
209		Temporary lighting & power for construction	121,805	gsf	1.40	170,527	
210		Replace original buildings existing electrical infrastructure	121,805	gsf	18.00	2,192,490	
211		Upgrade interior lighting with new fixtures using LED technology	121,805	gsf	10.00	1,218,050	
212		Update lighting controls throughout the building to meet latest energy code requirements	121,805	gsf	4.00	487,220	
213		Occupancy sensors	121,805	gsf	0.90	109,625	
214		Provide additional security system components, such as cameras, to provide full building coverage	121,805	gsf	4.10	500,000	
215		Receptacles upgrade	121,805	gsf	0.82	100,000	
216		MEP power wiring for new systems	121,805	gsf	5.50	669,928	
217		Misc electrical upgrades based on extg conditions	121,805	gsf	3.90	475,000	
218		Electrical trade coordinations and misc work	121,805	gsf	2.90	353,235	
219							
220		<b>Sub Total : Electrical</b>				<b>6,507,503</b>	
221							



South Shore Regional Voc Tech HS

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PSR Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
222		<b>SUBTOTAL FOR SERVICES</b>				End of Trade	\$ 18,939,112
223							
224							
225	<b>E</b>	<b>EQUIPMENT &amp; FURNISHINGS</b>					
226	<b>E10</b>	<b>Equipment</b>					
227	E1010	Commercial Equipment					
228		Replace stainless steel tables in the kitchen	1	LS	20,000.00	20,000	
229							
230		<b>Sub Total : Commercial Equipment</b>				<b>20,000</b>	
231							
232	E1020	Institutional Equipment				-	
233		xx	1	ls	-	-	
234							
235		<b>Sub Total : Institutional Equipment</b>				<b>-</b>	
236							
237	E1030	Vehicular Equipment					
238		No work this section	1	ls	-	-	
239							
240		<b>Sub Total : Vehicular Equipment</b>				<b>-</b>	
241							
242	E1090	Other Equipment					
243		Vocational Shops, equipment upgrades for ADA	121,805	gsf	1.85	225,000	
244							
245		<b>Sub Total : Other Equipment</b>				<b>225,000</b>	
246							
247							
248	<b>E20</b>	<b>Furnishings</b>					
249	E2010	<b>Fixed Furnishings</b>					
250		Casework package, upgrades for ADA	121,805	gsf	2.46	300,000	
251							
252		<b>Sub Total : Fixed Furnishings</b>				<b>300,000</b>	
253	E2020	<b>Moveable Furnishings</b>					
254		By Owner					
255							
256		<b>Sub Total : Moveable Furnishings</b>				<b>-</b>	
257							
258		<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				End of Trade	\$ 545,000
259							
260							
261	<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>					
262	<b>F10</b>	<b>Special Construction</b>					
263		Special Construction					
264		No work this section	1	ls	-	-	
265							
266		<b>Sub Total : Special Construction</b>				<b>-</b>	





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PSR Estimate - Base Repair Option

COST SUMMARY

BASE REPAIR OPTION			BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
267							
268							
269	<b>F20</b>	<b>Selective Building Demolition</b>					
270	F2010	<b>Building Elements Demolition</b>					
271		Building Demolition					
272		Exterior façade demolition	52,500	sf	13.00	682,500	
273		Interior demmolition required for new work	121,805	gsf	11.00	1,339,855	
274		Temporary weather enclosure, exterior wall	52,500	sf	15.50	813,750	
275							
276		<b>Sub Total : Building Elements Demolition</b>				<b>2,836,105</b>	
277							
278	F2020	<b>Hazardous Components Abatement</b>					
279		Hazardous Components Abatement					
280		Building - hazmat removals, 1962 bldg	83,130	gsf	16.00	1,330,080	
281		Site - existing UG structures	1	ea	50,000.00	50,000	
282							
283		<b>Sub Total : Hazardous Components Abatement</b>				<b>1,380,080</b>	
284							
285		<b>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				<b>End of Trade</b>	<b>\$ 4,216,185</b>
286							
287	<b>G</b>	<b>SITWORK</b>					
288	<b>G10</b>	<b>Site Preparation</b>					
289		Demolition work for site improvements work, work limits	1	ls	234,000.00	234,000	
290		Protection measures within work zone	1	ls	75,000.00	75,000	
291							
292		<b>Sub Total : Site Preparation</b>				<b>309,000</b>	
293							
294	<b>G20</b>	<b>Site Improvements</b>					
295		ADA parking spaces compliance	3	ea	3,900.00	11,700	
296		Trash/compactor equipment pad	1	ls	13,300.00	13,300	
297		Ramp 01, ADA compliant	75	lf	325.00	24,375	
298		Ramp 02, ADA compliant	50	lf	325.00	16,250	
299		Ramp 03, ADA compliant	18	lf	325.00	5,850	
300		Ramp 04, ADA compliant	18	lf	325.00	5,850	
301		Ramp 05, ADA compliant	18	lf	325.00	5,850	
302		Bleachers, ADA compliant	1	ls	108,000.00	108,000	
303		Walks, concrete	4,200	lf	110.00	462,000	
304		Earthwork removals and prep work for site improvements	1	ls	96,000.00	96,000	
305		Misc site improvements based on extg site conditions	1	ls	93,600.00	93,600	
306		Site restoration for new work	1	ls	78,000.00	78,000	
307							
308		<b>Sub Total : Site Improvements</b>				<b>920,775</b>	
309							
310	<b>G30</b>	<b>Site Mechanical Utilities</b>					
311		<b>Site, Storm</b>					



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PSR Estimate - Base Repair Option

COST SUMMARY

		BASE REPAIR OPTION	BUILDING AREA (bgsf)			121,805 GSF	RENOVATION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
312		On-site storm water management system	1	ls	500,000.00	500,000	
313		On-site, underground structures	1	ls	175,000.00	175,000	
314		On-site, underground piping	1	ls	550,000.00	550,000	
315		On-site, swales/vegetation construction, stormwater management	1	ls	150,000.00	150,000	
316							
317		<b>Site, Gas</b>					
318		Gas service line upgrade, excavation/backfill only	1	ls	22,800.00	22,800	
319						-	
320		<b>Site, Water</b>					
321		Site water service	800	lf	180.00	144,000	
322		Site fire water service	800	lf	220.00	176,000	
323		Site fire water, hydrants and service loop piping	4,500	lf	180.00	810,000	
324						-	
325		<b>Site, Sewer</b>					
326		Provide repairs/upgrades to existing sewer system	1	ls	\$ 168,400.00	168,400	
327							
328		<b>Sub Total : Site Mechanical Utilities</b>				<b>2,696,200</b>	
329							
330	<b>G40</b>	<b>Site Electrical Utilities</b>					
331		Upgrades to existing electrical service	1	ls	560,000.00	560,000	
332							
333		<b>Sub Total : Site Electrical Utilities</b>				<b>560,000</b>	
334							
335	<b>G90</b>	<b>Other Site Construction</b>					
336		No work this section	1	ls	-	-	
337							
338		<b>Sub Total : Other Site Construction</b>				<b>-</b>	
339							
340		<b>SUBTOTAL FOR SITEWORK</b>				<b>End of Trade</b>	<b>\$ 4,485,975</b>



South Shore Regional Vocational Technical HS

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Hanover, MA

Option AR-01 805

ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
3	A	<b>SUBSTRUCTURE</b>					
4	A10	<b>FOUNDATIONS</b>					
5	A1010	Standard Foundations					
6		<b>Extg Bldg</b>					
7		Repairs to extg foundations based on field conditions	112,100	gsf	0.40	44,840	
8		<b>New Bldg</b>					
9		Foundations/footings, perimeter walls	1,304	lf		-	
10		Formwork	15,648	sf	18.00	281,664	
11		Concrete materials	296	cy	168.00	49,728	
12		Reinforcing for foundations/footings, perimeter walls	20	tn	4,100.00	82,000	
13		Labor for foundations/footings, perimeter walls	296	cy	140.00	41,440	
14		Spread Footings, sizing TBD	160	ea		-	
15		Formwork	160	ea	1,900.00	304,000	
16		Concrete materials	1,394	cy	168.00	234,192	
17		Reinforcing for spread footings	80	tn	4,100.00	328,000	
18		Labor for foundations/footings, spread footings	1,394	cy	140.00	195,160	
19		Strip Interior Footings, sizing TBD	200	lf		-	
20		Formwork	800	sf	18.00	14,400	
21		Concrete materials	32	cy	168.00	5,376	
22		Reinforcing for spread footings	10	tn	4,100.00	41,000	
23		Labor for foundations/footings, spread footings	32	cy	140.00	4,480	
24		<b>Other Work</b>					
25		Tie new footings/walls to extg bldg	90	cy	900.00	81,000	
26		Elevator pit	2	ea	45,000.00	90,000	
27		Dam proofing to exterior frost wall	7,830	sf	6.00	46,980	
28		Insulation to exterior frost wall	7,830	sf	4.80	37,584	
29		Perimeter foundation wall drainage	1,304	lf	13.00	16,952	
30		Misc concrete work for building layouts	260	cy	900.00	234,000	
31		Div 03 Formwork, trade requirements and coordination	1,000	hr	180.00	180,000	
32		<b>Excavation/Backfill efforts for foundations/footings</b>					
33		Over excavation and soil improvements for SOG	13,100	cy	80.00	1,048,000	
34		Raise level grade of SOG, 08', import	17,400	cy	65.00	1,131,000	
35		Excavation/backfill efforts for foundations/footings	4,200	cy	39.00	163,800	
36		Excavation/backfill efforts for interior footings	1,100	cy	39.00	42,900	
37		Excavation/backfill efforts for elev pit	2	ea	4,800.00	9,600	
38		Excavation/backfill efforts for below slab UG plumbing/MEPs	275	cy	39.00	10,725	
39							
40		Sub Total : Standard Foundations				4,718,821	
41							
42	A1020	Special Foundations					
43		No work					
44							
45		Sub Total : Special Foundations				-	



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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
46							
47	A1030	Slab On Grade					
48		<b>Extg Bldg</b>					
49		Replacement slabs for underground plumbing work	4,000	sf	35.00	140,000	
50		<b>New Bldg</b>					
51		Slab on grade, complete	58,700	sf		-	
52		Gravel base/prep for SOG	2,283	cy	37.00	84,471	
53		Concrete materials	952	cy	168.00	159,936	
54		Reinforcing	58,700	sf	2.00	117,400	
55		Pour/finish	58,700	sf	12.00	704,400	
56		Vapor barrier	58,700	sf	3.00	176,100	
57		Other Work				-	
58		Underslab drainage, SOG	58,700	sf	1.20	70,440	
59		Misc concrete work for building layouts	200	cy	39.00	7,800	
60		Div 03 Flatwork, trade requirements and coordination	1,900	hr	39.00	74,100	
61		Excavation/Backfill efforts for foundations/footings					
62		Excavation/backfill efforts for SOG work	2,200	cy	39.00	85,800	
63							
64		Sub Total : Slab On Grade				1,620,447	
65							
66	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
67	A2010	Basement Excavation					
68		No work this section					
69							
70		Sub Total : Basement Excavation				-	
71							
72	A2020	Basement Walls					
73		No work this section					
74							
75		Sub Total : Basement Walls				-	
76							
77		<b>SUBTOTAL FOR SUBSTRUCTURE</b>				End of Trade	\$ 6,339,268
78							
79	<b>B</b>	<b>SHELL</b>					
80	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
81	B1010	Floor Construction					
82		<b>Extg Bldg</b>					
83		Modify exiting openings for MEP infrastructure	13	tn	5,100.00	66,300	
84		Firestopping, floor penetrations	7	dy	3,780.00	26,460	
85		<b>New Bldg</b>					
86		Steel for framing	870	tn	5,100.00	4,437,000	
87		Steel for exterior enclosures	50	tn	5,100.00	255,000	
88		Steel for interior construction (spans/openings/supports)	30	tn	5,100.00	153,000	





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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
					Area of New	123,210	
					Area of Reno	112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
89		Steel, other for building requirements	44	tn	5,100.00	224,400	
90		Metal decking for floors	64,510	sf	4.40	283,844	
91		Slab on decks	64,510	sf	8.00	516,080	
92		Other Work				-	
93		Div 05 Structural Steel, trade requirements and coordination	1,500	hr	190.00	285,000	
94		Fireproofing for floors	64,510	sf	2.80	180,628	
95		Firestopping, floor penetrations	7	dy	3,780.00	26,460	
96							
97		Sub Total : Floor Construction				6,454,172	
98							
99	B1020	Roof Construction					
100		<b>Extg Bldg</b>					
101		Modify exiting roof openings for MEP infrastructure	10	tn	8,900.00	89,000	
102		Firestopping, floor penetrations	5	dy	3,780.00	18,900	
103		<b>New Bldg</b>					
104		Steel for roof framing	420	tn	5,100.00	2,142,000	
105		Steel, other for building requirements	50	tn	5,100.00	255,000	
106		Metal decking for roof	59,100	sf	4.40	260,040	
107		Other Work				-	
108		Div 05 Structural Steel, trade requirements and coordination	700	hr	190.00	133,000	
109		Fireproofing for roof decking	59,100	sf	2.80	165,480	
110		Firestopping, floor penetrations	4	dy	3,780.00	15,120	
111							
112		Sub Total : Roof Construction				3,078,540	
113							
114							
115	B20	<b>EXTERIOR CLOSURE</b>					
116	B2010	Exterior Walls					
117		<b>Extg Bldg</b>					
118		Exterior wall surface area, extg	31,000	sf			
119		Exterior wall, stud framing, furring/extension	31,000	sf	8.00	248,000	
120		Exterior wall, insulation	31,000	sf	6.00	186,000	
121		Exterior wall, GWB finish	31,000	sf	5.00	155,000	
122		Exterior wall, soffits/returns	7,750	sf	19.00	147,250	
123		Exterior wall, sealants/caulking of dissimilar materials	31,000	sf	7.30	226,300	
124		<b>New Bldg</b>					
125		Exterior wall surface area, TBD based on bldg layouts	29,600	sf			
126		Exterior wall, stud framing	29,600	sf	19.00	562,400	
127		Exterior wall, insulation	29,600	sf	13.00	384,800	
128		Exterior wall, AVB	29,600	sf	9.00	266,400	
129		Exterior wall, sheathing	29,600	sf	9.00	266,400	
130		Exterior wall, GWB finish	29,600	sf	5.00	148,000	
131		Exterior wall, soffits/returns	7,400	sf	19.00	140,600	
132		Exterior wall, misc metals/supports	36	tn	4,200.00	151,200	



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Option AR-01 805

ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
					Area of New	123,210	
					Area of Reno	112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
133		Exterior wall, louvers/vents	80	sf	190.00	15,200	
134		Exterior wall surface area, cladding system, mixed materials	29,600	sf	110.00	3,256,000	
135		Exterior wall surface area, cladding system, soffits/returns/corners/wraps	5,400	sf	120.00	648,000	
136		Exterior wall, sealants/caulking of dissimilar materials	29,600	sf	3.80	112,480	
137		Exterior wall, bldg signage "South Shore Regional Vocational High School"	1	ea	18,620.00	18,620	
138							
139		Sub Total : Exterior Walls				6,932,650	
140							
141	B2020	Exterior windows					
142		<b>Extg Bldg</b>					
143		Exterior window surface area	12,500	sf			
144		Exterior windows, blocking/framing	12,500	sf	5.00	62,500	
145		Exterior glazing system	12,500	sf	200.00	2,500,000	
146		Exterior windows, sealants/caulking of dissimilar materials	12,500	sf	10.80	135,000	
147		<b>New Bldg</b>					
148		Exterior window surface area	12,700	sf			
149		Exterior windows, blocking/framing	12,700	sf	5.00	63,500	
150		Exterior glazing system	12,700	sf	200.00	2,540,000	
151		Exterior windows, sealants/caulking of dissimilar materials	12,700	sf	11.70	148,590	
152							
153		Sub Total : Exterior windows				5,449,590	
154							
155	B2030	Exterior doors					
156		Exterior doors including frames and hardware					
157		Vestibule, exterior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
158		Vestibule, interior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
159		Egress, exterior, (1) 3070 openings	5	ea	3,900.00	19,500	
160		Egress, exterior, (1) 6070 openings	8	ea	4,800.00	38,400	
161		Service Doors, exterior	2	ea	21,000.00	42,000	
162		Shops Doors, exterior	10	ea	25,200.00	252,000	
163		Exterior doors, sealants/caulking of dissimilar materials	5	dy	3,740.00	18,700	
164							
165		Sub Total : Exterior doors				448,360	
166							
167							
168	B30	<b>ROOFING</b>					
169	B3010	Roof Coverings					
170		<b>Extg Bldg</b>					
171		Roof surface area	105,900	sf			
172		Insulation system	105,900	sf	11.00	1,164,900	
173		Roof blocking requirements	105,900	sf	2.00	211,800	
174		Membrane cover	105,900	sf	19.00	2,012,100	
175		Parapets/edge covers	105,900	sf	1.00	105,900	
176		Flashings/counterflashing	105,900	sf	1.70	180,030	



South Shore Regional Vocational Technical HS

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Option AR-01 805

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
177		Special roof conditions work	105,900	sf	1.70	180,030	
178		MEP penetrations/flashings	105,900	sf	0.30	31,770	
179		Green roofs	21,180	sf	32.00	677,760	
180		Walkway pads	3,900	sf	30.00	117,000	
181		Roof hatch w/ guardrail	1	ea	7,900.00	7,900	
182		Guardrail, fall protection	1	ls	50,000.00	50,000	
183		<b>New Bldg</b>					
184		Roof surface area, TBD based on bldg layouts	59,200	sf			
185		Insulation system	59,200	sf	11.00	651,200	
186		Roof blocking requirements	59,200	sf	2.00	118,400	
187		Membrane cover	59,200	sf	19.00	1,124,800	
188		Parapets/edge covers	59,200	sf	1.00	59,200	
189		Flashings/counterflashing	59,200	sf	1.70	100,640	
190		Special roof conditions work	59,200	sf	1.70	100,640	
191		MEP penetrations/flashings	59,200	sf	0.30	17,760	
192		Green roofs	11,840	sf	32.00	378,880	
193		Walkway pads	3,900	sf	30.00	117,000	
194		Roof hatch w/ guardrail	2	ea	7,900.00	15,800	
195		Guardrail, fall protection	1	ls	75,000.00	75,000	
196							
197		Sub Total : Roof Coverings				7,498,510	
198							
199		<b>SUBTOTAL FOR SHELL</b>				End of Trade	\$ 29,861,822
200							
201							
202	<b>C</b>	<b>INTERIORS</b>					
203	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
204	C1010	Partitions, Rough Carpentry					
205		New partitions, GWB	137,300	sf	18.00	2,471,400	
206		New partitions, CMU	23,600	sf	25.00	590,000	
207		New partitions, glazing w/ frames	1,700	sf	115.00	195,500	
208		New partitions, misc metal for walls	57	tn	4,200.00	239,400	
209		New partitions, HM framed vision panels/openings	100	ea	1,600.00	160,000	
210		New partitions, blocking/framing	162,600	sf	1.00	162,600	
211		New partitions, firestopping	162,600	sf	0.70	113,820	
212		Glazing, interior for HM frames	3,200	sf	55.00	176,000	
213		Interior partitions, sealants/caulking of dissimilar materials	162,600	sf	0.65	105,690	
214		Interior partitions, GWB cover at extg ext walls to become interior walls	20,000	sf	13.00	260,000	
215							
216		Sub Total : Partitions, Rough Carpentry				4,474,410	
217							
218							
219	C1020	Interior Doors					
220		Frames, HM 3070	200	ea	290.00	58,000	



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
					Area of New	123,210	
					Area of Reno	112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
221		Frames, HM 6070	10	ea	480.00	4,800	
222		Frames, ALUM, 3080	30	ea	1,800.00	54,000	
223		Frames, ALUM, 6080	15	ea	2,400.00	36,000	
224		Doors, WD, 3070	200	ea	880.00	176,000	
225		Doors, WD, 6070	9	ea	1,760.00	15,840	
226		Doors, MTL, 6070	1	ea	480.00	480	
227		Doors, ALUM, 3080	30	ea	6,960.00	208,800	
228		Doors, ALUM, 6080	15	ea	13,920.00	208,800	
229		Hardware Set 01	200	ea	1,300.00	260,000	
230		Hardware Set 02	9	ea	1,800.00	16,200	
231		Hardware Set 03	1	ea	1,800.00	1,800	
232		Access doors for MEPs	12	ea	900.00	10,800	
233		Glazing, interior for doors	1,800	sf	55.00	99,000	
234		Interior openings, sealants/caulking of dissimilar materials	235,310	gsf	0.40	94,124	
235		ADA upgrades to ETR frames and door openings	235,310	gsf	0.50	117,655	
236							
237		Sub Total : Interior Doors				1,362,299	
238							
239							
240	C1030	Specialties/Fittings					
241		Millwork, interiors package, Div 064000	235,310	gsf	3.00	705,930	
242		Railings systems	235,310	gsf	0.50	117,655	
243		Wall surfacing, tackboards	235,310	gsf	0.75	176,483	
244		Wall surfacing, markerboards	235,310	gsf	0.45	105,890	
245		Wall surfacing, acoustical	235,310	gsf	1.20	282,372	
246		Wall surfacing, specialty	235,310	gsf	0.40	94,124	
247		Door signage, interior	235,310	gsf	0.90	211,779	
248		Door signage, exterior	235,310	gsf	0.03	7,059	
249		Toilet partitions	235,310	gsf	0.45	105,890	
250		Toilet accessories	235,310	gsf	0.70	164,717	
251		Fire Extinguishers	235,310	gsf	0.05	11,766	
252		AED	235,310	gsf	0.02	4,000	
253		Lockers, student	235,310	gsf	0.59	140,000	
254		Lockers, staff	235,310	gsf	0.09	21,178	
255		Specialties/Fittings, other	235,310	gsf	1.15	270,607	
256		Door signage, upgrade, interior	285,000	gsf	0.24	68,400	
257		Door signage, upgrade, exterior	285,000	gsf	0.02	6,000	
258		Cabinets, countertops, millwork, etc	285,000	gsf	2.81	800,000	
259							
260		Sub Total : Specialties/Fittings				3,293,848	
261							
262	C20	STAIRCASES					
263	C2010	Stair Construction					
264		Existing stairs, ADA upgrades	4	flt	25,000.00	100,000	
265		Stair # 01, egress, ETR	-	flt	39,000.00	-	





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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
266		Stair # 02, egress, ETR	-	ft	39,000.00	-	
267		Stair # 03, feature	2	ft	60,000.00	120,000	
268		Stair # 04, egress	3	ft	39,000.00	117,000	
269		Stair # 05, feature	3	ft	60,000.00	180,000	
270		Stair # 06, egress	3	ft	39,000.00	117,000	
271							
272		Sub Total : Stair Construction				634,000	
273							
274	C2020	Stair Finishes					
275		Stair finishes, egress	12	ft	6,800.00	81,600	
276		Stair finishes, feature	5	ft	11,000.00	55,000	
277							
278		Sub Total : Stair Finishes				136,600	
279							
280	C30	<b>INTERIOR FINISHES</b>					
281	C3010	Wall Finishes					
282		Paint, throughout all interior walls and ceilings surfaces	823,600	sf	0.95	782,420	
283		Wall finishes, tile/stone/hard materials	41,180	sf	30.00	1,235,400	
284		Sound attenuation measures, walls	12,354	sf	31.00	382,974	
285							
286		Sub Total : Wall Finishes				2,400,794	
287							
288	C3020	Floor Finishes					
289		New flooring, mixed materials	223,600	sf	12.00	2,683,200	
290		New flooring, floor prep at extg bldg	112,100	sf	4.00	448,400	
291		Moisture mitigation, level 01	58,700	sf	3.00	176,100	
292							
293		Sub Total : Floor Finishes				3,307,700	
294							
295							
296	C3030	Ceiling Finishes					
297		New ceilings, mixed materials	223,600	sf	14.00	3,130,400	
298		Sound attenuation measures, clgs	55,900	sf	14.00	782,600	
299							
300		Sub Total : Ceiling Finishes				3,913,000	
301							
302		<b>SUBTOTAL FOR INTERIORS</b>				End of Trade	\$ 19,522,651
303							
304							
305	D	<b>SERVICES</b>					
306	D10	<b>Elevators &amp; Lifts</b>					
307		Elevator # 01, 3 stop, in-line	1	ea	270,000.00	270,000	
308		Elevator # 02, 4 stop, in-line, F/B	1	ea	425,000.00	425,000	



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
309							
310		<b>Sub Total : Elevators &amp; Lifts</b>				<b>695,000</b>	
311							
312	<b>D20</b>	<b>Plumbing</b>					
313		Equipment	235,310	gsf	1.50	352,965	
314		(2) High-efficiency gas-fired water heaters				included	
315		Circulation pump				included	
316		Expansion tank				included	
317		Grease interceptors				included	
318		Air compressors				included	
319		Neutralization tank with pH adjustment system (chemical injection)				included	
320		Elevator sump pump with control panel and oil separator				included	
321		Domestic water filtration system - <i>assume</i>				included	
322							
323		Piping system	235,310	gsf	20.80	4,894,448	
324		Domestic water				included	
325		Non-potable water				included	
326		Sanitary waste and vent				included	
327		Laboratory waste and vent				included	
328		Kitchen grease waste system				included	
329		Storm water				included	
330		Natural gas				included	
331		Compressed air				included	
332		Valves and specialties (incl. hook-up equipment)				included	
333							
334		Plumbing fixtures (incl. fixture rough-in)	235,310	gsf	5.40	1,270,674	
335							
336		Other	235,310	gsf	1.50	352,965	
337		Access door	1	ls		incl above	
338		Penetrations and sleeves	1	ls		incl above	
339		Core drill, patching, fire stopping	1	ls		incl above	
340		Clean, flush and test	1	ls		incl above	
341		Disinfection	1	ls		incl above	
342		System validate / Certification	1	ls		incl above	
343		Equipment handling and material distribution	1	ls		incl above	
344		System ID / Valve tags	1	ls		incl above	
345		Shop co-ordination drawings	1	ls		incl above	
346		Supports	1	ls		incl above	
347		Coordination with other trades	1	ls		incl above	
348							
349		<b>Sub Total : Plumbing</b>				<b>6,871,052</b>	
350							
351	<b>D30</b>	<b>HVAC</b>					



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Option AR-01 805

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
352			Equipment (Option-1 - AHU with Displacement)	235,310	gsf	30.00	7,059,300
353			Roof top mounted air handling units				included
354			Energy Recovery Ventilators (ERVs)				included
355			Exhaust fans				included
356			Air to water source heat pump modular chiller				included
357			Chilled water pumps with VFD				included
358			Buffer tank				included
359			Gas fired condensing boilers				included
360			Heating hot water pumps with VFD				included
361			Glycol make up units				included
362			Expansion tanks				included
363			Air separators				included
364			Ductless split A/C units				included
365			Condensate pumps				included
366			Hot water cabinet unit heaters / Hot water unit heaters				included
367			Electric cabinet unit heaters / Electric unit heaters				included
368			Hot water radiant ceiling panels				included
369			Heat exchanger - <i>assume</i>				included
370			Central vehicle exhaust system				included
371			Dust collectors				included
372							
373			Fuel oil system - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.	1	ls	110,000.00	110,000
374							
375			Piping system	235,310	gsf	16.00	3,764,960
376			Chilled water pipe with insulation				included
377			Heating hot water pipe with insulation				included
378			Refrigerant pipe with insulation				included
379			Condensate drain pipe with insulation				included
380			Valves and specialties (incl. hook-up equipment)				included
381							
382			Air side system	235,310	gsf	22.00	5,176,820
383			Galvanized steel duct				included
384			Black iron 12 ga duct @ Kitchen exhaust hood				included
385			Duct insulation / Acoustical lining				included
386			Duct insulation @ Kitchen exhaust				included
387			Air devices (incl. displacement ventilation diffusers)				included
388			Dampers				included
389			Kitchen hood with fire suppression - <i>duct connection only</i>				included
390			Lab fume hoods - <i>duct connection only</i>				included
391			VAV boxes with sound trap				included
392			Boiler flue with insulation				included
393			Boiler combustion air intake				included



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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
394		Flues up thru roof for HVAC and Plumbing Shops				included	
395		Clean out doors				included	
396		Flexible connections @ Equipment				included	
397							
398		System controls	235,310	gsf	10.00	2,353,100	
399							
400		Other	235,310	gsf	2.40	564,744	
401		Access doors				included	
402		Vibration isolation / Seismic				included	
403		Temporary HVAC				included	
404		Penetrations and sleeves				included	
405		Core drill, patching, fire stopping				included	
406		Test and balance				included	
407		Clean, flush and test (piping system)				included	
408		System start-up / Commissioning				included	
409		Rigging				included	
410		Equipment handling and material distribution				included	
411		System ID / Valve tags				included	
412		Shop co-ordination drawings				included	
413		O&M manuals				included	
414		Equipment, duct and pipe supports				included	
415		Coordination with other trades				included	
416							
417		<b>Sub Total : HVAC</b>				<b>19,028,924</b>	
418							
419	<b>D40</b>	<b>Fire Protection</b>					
420		<b>21000 Fire Protection</b>					
421		Equipment					
422		Fire pump with controller				not Req'd	
423		Jockey pump with controller				not Req'd	
424							
425		Wet sprinkler system	235,310	gsf	7.50	1,764,825	
426		Wet sprinkler system pipe	1	ls		included	
427		Sprinkler heads	1	ls		included	
428		Alarm check valve assembly	1	ea		included	
429		2-1/2" Fire hose valve in cabinet	1	ls		included	
430		Floor control valves assembly with tamper switch	1	ls		included	
431		Other valves and specialties	1	ls		included	
432		Roof hydrant / Roof manifold	1	ea		included	
433		Siamese connections	1	ls		included	
434		Locked storage fire department cabinet	1	ea		included	
435							
436		Other	235,310	gsf	0.50	117,655	





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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New 123,210	
						Area of Reno 112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
437		System ID, labels and color coding	1	ls		included	
438		Shop co-ordination drawings	1	ls		included	
439		Painting main sprinkler pipe	1	ls		included	
440		Design calculations	1	ls		included	
441		Core drill, patching, fire stopping	1	ls		included	
442		Clean, flush and test	1	ls		included	
443		Commissioning	1	ls		included	
444		Material distribution	1	ls		included	
445		Supports	1	ls		included	
446		Coordination with other trades	1	ls		included	
447							
448		<b>Sub Total : Fire Protection</b>				<b>1,882,480</b>	
449							
450	<b>D50</b>	<b>Electrical</b>					
451		Demolition	235,310	gsf	0.30	70,593	
452							
453		Power Distribution					
454		Normal power	235,310	gsf	3.15	741,227	
455		3000 Amp main switchboard	1	ea		included	
456		1600 Amp distribution board	1	ea		included	
457		1200 Amp distribution board	1	ea		included	
458		800 Amp panel, 208V, 2-section	1	ea		included	
459		600 Amp panel, 480V	1	ea		included	
460		600 Amp panel, 208V	1	ea		included	
461		400 Amp panel, 480V	3	ea		included	
462		400 Amp panel, 208V	1	ea		included	
463		400 Amp panel, 208V, 2-section	5	ea		included	
464		225 Amp panel, 480V	1	ea		included	
465		225 Amp panel, 208V, 2-section	7	ea		included	
466		225 Amp panel, 208V	1	ea		included	
467		100 Amp panel, 480V	6	ea		included	
468		100 Amp panel, 208V	9	ea		included	
469		60 Amp panel, 480V	1	ea		included	
470		500 KVA transformer	1	ea		included	
471		300 KVA transformer	1	ea		included	
472		150 KVA transformer	1	ea		included	
473		112.5 KVA transformer	1	ea		included	
474		CT cabinet	1	ea		included	
475		Utility meter	1	ea		by National Grid	
476		Panel mounting assembly	37	ea		included	
477		Transformer support	4	ea		included	
478		Housekeeping concrete pad	3	ea		included	
479							



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
					Area of New	123,210	
					Area of Reno	112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
480		Power Distribution - Emergency Power	235,310	sf	2.25	529,448	
481		400 KW diesel generator	1	ea		included	
482		Sound attenuated enclosure, WP	1	ea		included	
483		72-hr sub-base fuel tank	1	ea		included	
484		Circuit breakers	1	ls		included	
485		Battery charger and block heater	1	ls		included	
486		Remote annunciator	1	ea		included	
487		Unload, unpack, set in place generator and accessories	1	ls		included	
488		600 Amp ATS	1	ea		included	
489		100 Amp ATS	1	ea		included	
490		ATS mounting assembly	2	ea		included	
491							
492		Feeders - Normal and Emergency Power	235,310	sf	3.25	764,758	
493							
494		PV System (future)					
495		3" conduit (empty)	1	ls	15,000.00	15,000	
496							
497		Lighting (interior upgrades)	235,310	gsf	9.00	2,117,790	
498		Lighting (exterior upgrades)	1	ls	40,000.00	40,000	
499							
500		Lighting Control	235,310	gsf	2.55	600,041	
501							
502		Branch Circuitry	235,310	sf	3.00	705,930	
503		Power to equipment and devices (F & I B.O.)				w/above	
504		Food service equipment				w/above	
505		Plumbing electronic faucets/valves				w/above	
506		Hand dryers				w/above	
507		Low voltage systems				w/above	
508							
509		Mechanical Requirements	235,310	sf	4.50	1,058,895	
510							
511		Fire Alarm System	235,310	gsf	7.00	1,647,170	
512		Mass Notification System				w/above	
513							
514		Emergency Electric and Gas Shut-off System	1	ls	25,000.00	25,000	
515							
516		Distributed Antenna System	235,310	gsf	0.30	70,593	
517							
518		Two-way Communication System	235,310	gsf	0.30	70,593	
519							
520		Tel/data System	235,310	gsf	6.50	1,529,515	
521							
522		Audio Visual System	235,310	gsf	2.75	647,103	



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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
523						w/above	
524						w/above	
525							
526							
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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
566			Not included			-	
567							
568			<b>Sub Total : Vehicular Equipment</b>			-	
569							
570	E1090		<b>Other Equipment</b>				
571			Vocational Shops, equipment/furnishings not covered by Owner FF&E	235,310	gsf	2.29	540,000
572			Stage equipment	235,310	gsf	1.27	300,000
573							
574			<b>Sub Total : Other Equipment</b>			<b>840,000</b>	
575							
576							
577	E20		<b>Furnishings</b>				
578	E2010		<b>Fixed Furnishings</b>				
579			Casework-teaching spaces, interiors package, Div 064000	235,310	gsf	3.00	705,930
580			Science/Lab casework	235,310	gsf	7.00	1,647,170
581			Shops lockers	235,310	gsf	0.68	160,000
582			Student lockers	235,310	gsf	0.51	120,000
583			Athletics lockers	235,310	gsf	0.34	80,000
584							
585			<b>Sub Total : Fixed Furnishings</b>			<b>2,713,100</b>	
586	E2020		<b>Moveable Furnishings</b>				
587			By Owner				
588							
589			<b>Sub Total : Moveable Furnishings</b>			-	
590							
591			<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>			<b>End of Trade</b>	<b>\$ 6,531,545</b>
592							
593							
594	F		<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				
595	F10		<b>Special Construction</b>				
596			Special Construction			-	-
597			No work this section			-	-
598							
599			<b>Sub Total : Special Construction</b>			-	
600							
601							
602	F20		<b>Selective Building Demolition</b>				
603	F2010		<b>Building Elements Demolition</b>				
604			Building Demolition				
605			Extg building, exterior façade materials and structure demo	123,510	sf	3.00	370,530
606			Extg building, interiors construction and finishes demo	123,510	sf	14.00	1,729,140
607			Temporary supports and shoring of extg structure to remain	123,510	sf	0.97	120,000
608			Temporary weather enclosures and protection of extg structure	123,510	sf	4.05	500,000





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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
609							
610		<b>Sub Total : Building Elements Demolition</b>				<b>2,719,670</b>	
611							
612	F2020	<b>Hazardous Components Abatement</b>					
613		Hazardous Components Abatement					
614		Building - hazmat removals	123,510	gsf	14.17	1,750,000	
615							
616		<b>Sub Total : Hazardous Components Abatement</b>				<b>1,750,000</b>	
617							
618		<b><u>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</u></b>				<b>End of Trade</b>	<b>\$ 4,469,670</b>
619							
620	<b>G</b>	<b><u>SITEWORK</u></b>					
621	<b>G10</b>	<b>Site Preparation</b>					
622		Clear & grub site; remove grass, shrubs, vegetation, furnishing, etc. Including H&D	459,476	sf	0.15	68,921	
623		Remove trees. Assumed qty	25	ea	450.00	11,250	
624		Remove concrete/asphalt pavement at existing parking lots and drives; inc H&D	215,374	sf	4.00	861,496	
625		Misc site demolition work for site improvements work, work limits	1	ls	94,200.00	94,200	
626		Protection measures	1	ls	207,200.00	207,200	
627		Raise level grade for site improvements work	37,100	cy	65.00	2,411,500	
628							
629		<b>Sub Total : Site Preparation</b>				<b>3,654,567</b>	
630							
631	<b>G20</b>	<b>Site Improvements</b>					
632		New asphalt pavement at parking lots and drives; incl subbase	254,817	sf	3.00	764,451	
633		ADA parking spaces compliance. Assumed qty	4	ea	2,000.00	8,000	
634		New curbing at parking lots, drives, and walks, granite	9,760	lf	47.00	458,720	
635		Concrete pavement	20,105	sf	15.00	301,575	
636		Athletic field improvement, walkways. Assumed qty	5,000	sf	15.00	75,000	
637		Track, running surface, asphalt w/ rubber surface	25,687	sf	19.00	488,053	
638		Baseball field (sod, soils, sand blanket drainage, root zone)	70,544	sf	2.00	141,088	
639		Softball field (sod, soils, sand blanket drainage, root zone)	41,466	sf	2.00	82,932	
640		Irrigation at grassed fields	112,010	sf	0.70	78,407	
641		Baseball, backstop and fencing	1	ls	90,000.00	90,000	
642		Softball, backstop and fencing	1	ls	71,000.00	71,000	
643		Railings/guardrails at ramps and stairs. Assumed qty	900	lf	300.00	270,000	
644		Baseball field, railings. Assumed qty	400	lf	300.00	120,000	
645		Softball field, railings. Assumed qty	250	lf	300.00	75,000	
646		Bleachers, baseball	1	ls	70,000.00	70,000	
647		Bleachers, softball	1	ls	70,000.00	70,000	
648		Bleachers, track	250	seat	150.00	37,500	
649		Security gates. 26' each	2	pr	12,000.00	24,000	
650		Press box, 8'x24' @ track	1	ls	60,000.00	60,000	



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			235,310	ADD/RENO
					Area of New	123,210	
					Area of Reno	112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
651		Lighting, fields, (4) high masts, track/sports field	1	ls	900,000.00	900,000	
652		Lighting, walks, low/bollard	1	ls	150,000.00	150,000	
653		Synthetic turf @ Multipurpose field	81,894	sf	12.00	982,728	
654		Landscape restoration/plantings improvements (grass, mulch, plantings)	326,585	sf	4.00	1,306,340	
655		Boardwalk. 80'x16'	1,280	sf	300.00	384,000	
656		Walkway; between 99 spaces parking and driveway. Assume 16' W	12,800	sf	15.00	192,000	
657		Wetland fill	750	sf	5.00	3,750	
658		Wetland replication	1,500	sf	10.00	15,000	
659		New trees. Assumed qty	50	ea	1,500.00	75,000	
660		Wetlands protections	1	ls	60,000.00	60,000	
661		Retaining wall construction, precast concrete block w/ back drainage	200	lf	900.00	180,000	
662		Misc site improvements	1	ls	753,500.00	753,500	
663							
664		<b>Sub Total : Site Improvements</b>				<b>8,288,044</b>	
665							
666	<b>G30</b>	<b>Site Mechanical Utilities</b>					
667		<b>Site, Storm</b>					
668		On-site UG storm water detention/management system	1	ls	4,375,000.00	4,375,000	
669		On-site, storm underground structures	1	ls	152,000.00	152,000	
670		On-site, storm underground piping	1	ls	575,000.00	575,000	
671		On-site, swales/vegetation reconstruction, stormwater management	1	ls	130,000.00	130,000	
672							
673		<b>Site, Gas</b>					
674		Gas service line	1	ls	95,000.00	95,000	
675						-	
676		<b>Site, Water</b>					
677		Site domestic water service	1,800	lf	120.00	216,000	
678		Site fire water service	1,500	lf	140.00	210,000	
679		Site fire water, hydrants and service piping	1	ls	455,000.00	455,000	
680						-	
681		<b>Site, Sewer</b>					
682		Wastewater treatment plant facility	1,200	sf	3,333.33	4,000,000	
683		Site sewer service	900	lf	120.00	108,000	
684		On-site, sewer underground structures	1	ls	57,600.00	57,600	
685		On-site, sewer underground piping	1	ls	62,100.00	62,100	
686							
687		<b>Sub Total : Site Mechanical Utilities</b>				<b>10,435,700</b>	
688							
689	<b>G40</b>	<b>Site Electrical Utilities</b>					
690		Incoming service	1	ls	200,000.00	200,000	
691		Utility transformer	1	ea		by National Grid	
692		3000 Amp feeder (PVC sch.40 conduit)				included	
693		800 Amp feeder (PVC sch.40 conduit)				included	
694		400 Amp feeder (PVC sch.40 conduit)				included	
695		Excavation/backfill/concrete encasement				included	



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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
696						included	
697						included	
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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			235,310	ADD/RENO
						Area of New	123,210
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
739		<b>SUBTOTAL FOR SITEWORK</b>				End of Trade	\$ 24,650,566





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Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
3	A	<b>SUBSTRUCTURE</b>					
4	A10	<b>FOUNDATIONS</b>					
5	A1010	Standard Foundations					
6		<b>Extg Bldg</b>					
7		Repairs to extg foundations based on field conditions	112,100	gsf	0.40	44,840	
8		<b>New Bldg</b>					
9		Foundations/footings, perimeter walls	2,110	lf		-	
10		Formwork	25,320	sf	18.00	455,760	
11		Concrete materials	479	cy	168.00	80,472	
12		Reinforcing for foundations/footings, perimeter walls	30	tn	4,100.00	123,000	
13		Labor for foundations/footings, perimeter walls	479	cy	140.00	67,060	
14		Spread Footings, sizing TBD	180	ea		-	
15		Formwork	180	ea	1,900.00	342,000	
16		Concrete materials	1,568	cy	168.00	263,424	
17		Reinforcing for spread footings	90	tn	4,100.00	369,000	
18		Labor for foundations/footings, spread footings	1,568	cy	140.00	219,520	
19		Strip Interior Footings, sizing TBD	400	lf		-	
20		Formwork	1,600	sf	18.00	28,800	
21		Concrete materials	63	cy	168.00	10,584	
22		Reinforcing for spread footings	10	tn	4,100.00	41,000	
23		Labor for foundations/footings, spread footings	63	cy	140.00	8,820	
24		<b>Other Work</b>				-	
25		Tie new footings/walls to extg bldg	100	cy	900.00	90,000	
26		Elevator pit	2	ea	45,000.00	90,000	
27		Damproofing to exterior frost wall	12,660	sf	6.00	75,960	
28		Insulation to exterior frost wall	12,660	sf	4.80	60,768	
29		Perimeter foundation wall drainage	2,110	lf	13.00	27,430	
30		Misc concrete work for building layouts	320	cy	900.00	288,000	
31		Div 03 Formwork, trade requirements and coordination	1,200	hr	180.00	216,000	
32		<b>Excavation/Backfill efforts for foundations/footings</b>				-	
33		Over excavation and soil improvements for SOG	13,300	cy	80.00	1,064,000	
34		Raise level grade of SOG, 08', import	17,700	cy	65.00	1,150,500	
35		Excavation/backfill efforts for foundations/footings	4,800	cy	39.00	187,200	
36		Excavation/backfill efforts for interior footings	1,200	cy	39.00	46,800	
37		Excavation/backfill efforts for elev pit	2	ea	4,800.00	9,600	
38		Excavation/backfill efforts for below slab UG plumbing/MEPs	300	cy	39.00	11,700	
39							
40		Sub Total : Standard Foundations				<b>5,372,238</b>	
41							
42	A1020	Special Foundations					
43		No work					
44							
45		Sub Total : Special Foundations				-	



South Shore Regional Vocational Technical HS

01/18/2024

Hanover, MA

Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
46							
47	A1030	Slab On Grade					
48		<b>Extg Bldg</b>					
49		Replacement slabs for underground plumbing work	4,000	sf	35.00	140,000	
50		<b>New Bldg</b>					
51		Slab on grade, complete	59,517	sf		-	
52		Gravel base/prep for SOG	2,315	cy	37.00	85,655	
53		Concrete materials	965	cy	168.00	162,120	
54		Reinforcing	59,517	sf	2.00	119,034	
55		Pour/finish	59,517	sf	12.00	714,204	
56		Vapor barrier	59,517	sf	3.00	178,551	
57		Other Work				-	
58		Underslab drainage, SOG	59,517	sf	1.20	71,420	
59		Misc concrete work for building layouts	200	cy	39.00	7,800	
60		Div 03 Flatwork, trade requirements and coordination	1,900	hr	39.00	74,100	
61		Excavation/Backfill efforts for foundations/footings					
62		Excavation/backfill efforts for SOG work	2,300	cy	39.00	89,700	
63							
64		Sub Total : Slab On Grade				1,642,584	
65							
66	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
67	A2010	Basement Excavation					
68		No work this section					
69							
70		Sub Total : Basement Excavation				-	
71							
72	A2020	Basement Walls					
73		No work this section					
74							
75		Sub Total : Basement Walls				-	
76							
77		<b>SUBTOTAL FOR SUBSTRUCTURE</b>				End of Trade	\$ 7,014,822
78							
79	<b>B</b>	<b>SHELL</b>					
80	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
81	B1010	Floor Construction					
82		Modify exiting openings for MEP infrastructure	16	tn	8,900.00	142,400	
83		Firestopping, floor penetrations	8	dy	3,780.00	30,240	
84		<b>New Bldg</b>					
85		Steel for framing	1,000	tn	5,100.00	5,100,000	
86		Steel for exterior enclosures	100	tn	5,100.00	510,000	
87		Steel for interior construction (spans/openings/supports)	50	tn	5,100.00	255,000	
88		Steel, other for building requirements	50	tn	5,100.00	255,000	



South Shore Regional Vocational Technical HS

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Hanover, MA

Option AR-01 900

ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
89		Metal decking for floors	82,373	sf	4.40	362,441	
90		Slab on decks	82,373	sf	8.00	658,984	
91		Other Work				-	
92		Div 05 Structural Steel, trade requirements and coordination	1,800	hr	190.00	342,000	
93		Fireproofing for floors	82,373	sf	2.80	230,644	
94		Firestopping, floor penetrations	15	dy	3,780.00	56,700	
95							
96		Sub Total : Floor Construction				7,943,410	
97							
98	B1020	Roof Construction					
99		<b>Extg Bldg</b>					
100		Modify exiting roof openings for MEP infrastructure	12	tn	5,100.00	61,200	
101		Firestopping, floor penetrations	6	dy	3,780.00	22,680	
102		<b>New Bldg</b>					
103		Steel for roof framing	410	tn	5,100.00	2,091,000	
104		Steel, other for building requirements	50	tn	5,100.00	255,000	
105		Metal decking for roof	58,211	sf	4.40	256,128	
106		Other Work				-	
107		Div 05 Structural Steel, trade requirements and coordination	700	hr	190.00	133,000	
108		Fireproofing for roof decking	58,211	sf	2.80	162,991	
109		Firestopping, floor penetrations	4	dy	3,780.00	15,120	
110							
111		Sub Total : Roof Construction				2,997,119	
112							
113							
114	B20	<b>EXTERIOR CLOSURE</b>					
115	B2010	Exterior Walls					
116		<b>Extg Bldg</b>					
117		Exterior wall surface area, extg	31,000	sf			
118		Exterior wall, stud framing, furring/extension	31,000	sf	8.00	248,000	
119		Exterior wall, insulation	31,000	sf	6.00	186,000	
120		Exterior wall, GWB finish	31,000	sf	5.00	155,000	
121		Exterior wall, soffits/returns	7,750	sf	19.00	147,250	
122		Exterior wall, sealants/caulking of dissimilar materials	31,000	sf	9.20	285,200	
123		<b>New Bldg</b>					
124		Exterior wall surface area, TBD based on bldg layouts	36,600	sf			
125		Exterior wall, stud framing	36,600	sf	19.00	695,400	
126		Exterior wall, insulation	36,600	sf	13.00	475,800	
127		Exterior wall, AVB	36,600	sf	9.00	329,400	
128		Exterior wall, sheathing	36,600	sf	9.00	329,400	
129		Exterior wall, GWB finish	36,600	sf	5.00	183,000	
130		Exterior wall, soffits/returns	9,150	sf	19.00	173,850	
131		Exterior wall, misc metals/supports	73	tn	4,200.00	306,600	
132		Exterior wall, louvers/vents	90	sf	190.00	17,100	



South Shore Regional Vocational Technical HS

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Option AR-01 900

ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
133		Exterior wall surface area, cladding system, mixed materials	36,600	sf	110.00	4,026,000	
134		Exterior wall surface area, cladding system, soffits/returns/corners/wraps	6,600	sf	120.00	792,000	
135		Exterior wall, sealants/caulking of dissimilar materials	36,600	sf	3.90	142,740	
136		Exterior wall, bldg signage "South Shore Regional Vocational High School"	1	ea	18,620.00	18,620	
137							
138		Sub Total : Exterior Walls				8,511,360	
139							
140	B2020	Exterior windows					
141		<b>Extg Bldg</b>					
142		Exterior window surface area	7,900	sf			
143		Exterior windows, blocking/framing	7,900	sf	5.00	39,500	
144		Exterior glazing system	7,900	sf	200.00	1,580,000	
145		Exterior windows, sealants/caulking of dissimilar materials	7,900	sf	21.60	170,640	
146		<b>New Bldg</b>					
147		Exterior window surface area	15,700	sf			
148		Exterior windows, blocking/framing	15,700	sf	5.00	78,500	
149		Exterior glazing system	15,700	sf	200.00	3,140,000	
150		Exterior windows, sealants/caulking of dissimilar materials	15,700	sf	19.50	306,150	
151							
152		Sub Total : Exterior windows				5,314,790	
153							
154	B2030	Exterior doors					
155		Exterior doors including frames and hardware					
156		Vestibule, exterior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
157		Vestibule, interior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
158		Egress, exterior, (1) 3070 openings	5	ea	3,900.00	19,500	
159		Egress, exterior, (1) 6070 openings	8	ea	4,800.00	38,400	
160		Service Doors, exterior	2	ea	21,000.00	42,000	
161		Shops Doors, exterior	10	ea	25,200.00	252,000	
162		Exterior doors, sealants/caulking of dissimilar materials	6	dy	3,740.00	22,440	
163							
164		Sub Total : Exterior doors				452,100	
165							
166							
167	B30	<b>ROOFING</b>					
168	B3010	Roof Coverings					
169		<b>Extg Bldg</b>					
170		Roof surface area	105,900	sf			
171		Insulation system	105,900	sf	11.00	1,164,900	
172		Roof blocking requirements	105,900	sf	2.00	211,800	
173		Membrane cover	105,900	sf	19.00	2,012,100	
174		Parapets/edge covers	105,900	sf	1.00	105,900	
175		Flashings/counterflashing	105,900	sf	1.70	180,030	
176		Special roof conditions work	105,900	sf	1.70	180,030	





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Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
177	MEP penetrations/flashings	105,900	sf	0.30	31,770		
178	Green roofs	21,180	sf	32.00	677,760		
179	Walkway pads	3,900	sf	30.00	117,000		
180	Roof hatch w/ guardrail	1	ea	7,900.00	7,900		
181	Guardrail, fall protection	1	ls	50,000.00	50,000		
182	<b>New Bldg</b>						
183	Roof surface area, TBD based on bldg layouts	58,211	sf				
184	Insulation system	58,211	sf	11.00	640,321		
185	Roof blocking requirements	58,211	sf	2.00	116,422		
186	Membrane cover	58,211	sf	19.00	1,106,009		
187	Parapets/edge covers	58,211	sf	1.00	58,211		
188	Flashings/counterflashing	58,211	sf	1.70	98,959		
189	Special roof conditions work	58,211	sf	1.70	98,959		
190	MEP penetrations/flashings	58,211	sf	0.30	17,463		
191	Green roofs	11,642	sf	32.00	372,550		
192	Walkway pads	3,900	sf	30.00	117,000		
193	Roof hatch w/ guardrail	2	ea	7,900.00	15,800		
194	Guardrail, fall protection	1	ls	75,000.00	75,000		
195							
196	Sub Total : Roof Coverings				7,455,884		
197							
198	<b>SUBTOTAL FOR SHELL</b>				End of Trade	\$ 32,674,663	
199							
200							
201	<b>C</b>	<b>INTERIORS</b>					
202	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
203	C1010	Partitions, Rough Carpentry					
204		New partitions, GWB	148,200	sf	18.00	2,667,600	
205		New partitions, CMU	127,000	sf	5.00	635,000	
206		New partitions, glazing w/ frames	1,800	sf	115.00	207,000	
207		New partitions, misc metal for walls	61	tn	4,200.00	256,200	
208		New partitions, HM framed vision panels/openings	160	ea	1,600.00	256,000	
209		New partitions, blocking/framing	277,000	sf	1.00	277,000	
210		New partitions, firestopping	277,000	sf	0.70	193,900	
211		Glazing, interior for HM frames	5,120	sf	55.00	281,600	
212		Interior partitions, sealants/caulking of dissimilar materials	277,000	sf	0.65	180,050	
213		Interior partitions, GWB cover at extg ext walls to become interior walls	20,000	sf	13.00	260,000	
214							
215		Sub Total : Partitions, Rough Carpentry				5,214,350	
216							
217							
218	C1020	Interior Doors					
219		Frames, HM 3070	220	ea	290.00	63,800	
220		Frames, HM 6070	20	ea	480.00	9,600	



South Shore Regional Vocational Technical HS

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Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
221		Frames, ALUM, 3080	32	ea	1,800.00	57,600	
222		Frames, ALUM, 6080	16	ea	2,400.00	38,400	
223		Doors, WD, 3070	220	ea	880.00	193,600	
224		Doors, WD, 6070	18	ea	1,760.00	31,680	
225		Doors, MTL, 6070	2	ea	480.00	960	
226		Doors, ALUM, 3080	32	ea	6,960.00	222,720	
227		Doors, ALUM, 6080	16	ea	13,920.00	222,720	
228		Hardware Set 01	220	ea	1,300.00	286,000	
229		Hardware Set 02	18	ea	1,800.00	32,400	
230		Hardware Set 03	2	ea	1,800.00	3,600	
231		Access doors for MEPs	13	ea	900.00	11,700	
232		Glazing, interior for doors	1,980	sf	55.00	108,900	
233		Interior openings, sealants/caulking of dissimilar materials	253,990	gsf	0.40	101,596	
234		ADA upgrades to ETR frames and door openings	253,990	gsf	0.50	126,995	
235							
236		Sub Total : Interior Doors				1,512,271	
237							
238							
239	C1030	Specialties/Fittings					
240		Millwork, interiors package, Div 064000	253,990	gsf	3.00	761,970	
241		Railings systems	253,990	gsf	0.50	126,995	
242		Wall surfacing, tackboards	253,990	gsf	0.75	190,493	
243		Wall surfacing, markerboards	253,990	gsf	0.45	114,296	
244		Wall surfacing, acoustical	253,990	gsf	1.20	304,788	
245		Wall surfacing, specialty	253,990	gsf	0.40	101,596	
246		Door signage, interior	253,990	gsf	0.90	228,591	
247		Door signage, exterior	253,990	gsf	0.03	7,620	
248		Toilet partitions	253,990	gsf	0.45	114,296	
249		Toilet accessories	253,990	gsf	0.70	177,793	
250		Fire Extinguishers	253,990	gsf	0.05	12,700	
251		AED	253,990	gsf	0.02	4,000	
252		Lockers, student	253,990	gsf	0.55	140,000	
253		Lockers, staff	253,990	gsf	0.09	22,859	
254		Specialties/Fittings, other	253,990	gsf	1.15	292,089	
255		Door signage, upgrade, interior	285,000	gsf	0.24	68,400	
256		Door signage, upgrade, exterior	285,000	gsf	0.02	6,000	
257		Cabinets, countertops, millwork, etc	285,000	gsf	2.81	800,000	
258							
259		Sub Total : Specialties/Fittings				3,474,483	
260							
261	C20	STAIRCASES					
262	C2010	Stair Construction					
263		Existing stairs, ADA upgrades	4	ft	25,000.00	100,000	
264		Stair # 01, egress, ETR	-	ft	39,000.00	-	
265		Stair # 02, egress, ETR	-	ft	39,000.00	-	



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Option AR-01 900

ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
266		Stair # 03, feature	2	ft	60,000.00	120,000	
267		Stair # 04, egress	3	ft	39,000.00	117,000	
268		Stair # 05, feature	3	ft	60,000.00	180,000	
269		Stair # 06, egress	3	ft	39,000.00	117,000	
270							
271		Sub Total : Stair Construction				634,000	
272							
273	C2020	Stair Finishes					
274		Stair finishes, egress	12	ft	6,800.00	81,600	
275		Stair finishes, feature	5	ft	11,000.00	55,000	
276							
277		Sub Total : Stair Finishes				136,600	
278							
279	C30	<b>INTERIOR FINISHES</b>					
280	C3010	Wall Finishes					
281		Paint, throughout all interior walls and ceilings surfaces	889,000	sf	0.95	844,550	
282		Wall finishes, tile/stone/hard materials	44,450	sf	30.00	1,333,500	
283		Sound attenuation measures, walls	13,335	sf	31.00	413,385	
284							
285		Sub Total : Wall Finishes				2,591,435	
286							
287	C3020	Floor Finishes					
288		New flooring, mixed materials	241,300	sf	12.00	2,895,600	
289		New flooring, floor prep at extg bldg	112,100	sf	4.00	448,400	
290		Moisture mitigation, level 01	59,517	sf	3.00	178,551	
291							
292		Sub Total : Floor Finishes				3,522,551	
293							
294							
295	C3030	Ceiling Finishes					
296		New ceilings, mixed materials	241,300	sf	14.00	3,378,200	
297		Sound attenuation measures, clgs	60,325	sf	14.00	844,550	
298							
299		Sub Total : Ceiling Finishes				4,222,750	
300							
301		<b>SUBTOTAL FOR INTERIORS</b>				End of Trade	\$ 21,308,440
302							
303							
304	D	<b>SERVICES</b>					
305	D10	<b>Elevators &amp; Lifts</b>					
306		Elevator # 01, 3 stop, in-line	1	ea	270,000.00	270,000	
307		Elevator # 02, 4 stop, in-line, F/B	1	ea	425,000.00	425,000	
308							



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
309		<b>Sub Total : Elevators &amp; Lifts</b>				<b>695,000</b>	
310							
311	<b>D20</b>	<b>Plumbing</b>					
312		Equipment	253,990	gsf	1.50	380,985	
313		(2) High-efficiency gas-fired water heaters				included	
314		Circulation pump				included	
315		Expansion tank				included	
316		Grease interceptors				included	
317		Air compressors				included	
318		Neutralization tank with pH adjustment system (chemical injection)				included	
319		Elevator sump pump with control panel and oil separator				included	
320		Domestic water filtration system - <i>assume</i>				included	
321							
322		Piping system	253,990	gsf	20.80	5,282,992	
323		Domestic water				included	
324		Non-potable water				included	
325		Sanitary waste and vent				included	
326		Laboratory waste and vent				included	
327		Kitchen grease waste system				included	
328		Storm water				included	
329		Natural gas				included	
330		Compressed air				included	
331		Valves and specialties (incl. hook-up equipment)				included	
332							
333		Plumbing fixtures (incl. fixture rough-in)	253,990	gsf	5.40	1,371,546	
334							
335		Other	253,990	gsf	1.50	380,985	
336		Access door	1	ls		incl above	
337		Penetrations and sleeves	1	ls		incl above	
338		Core drill, patching, fire stopping	1	ls		incl above	
339		Clean, flush and test	1	ls		incl above	
340		Disinfection	1	ls		incl above	
341		System validate / Certification	1	ls		incl above	
342		Equipment handling and material distribution	1	ls		incl above	
343		System ID / Valve tags	1	ls		incl above	
344		Shop co-ordination drawings	1	ls		incl above	
345		Supports	1	ls		incl above	
346		Coordination with other trades	1	ls		incl above	
347							
348		<b>Sub Total : Plumbing</b>				<b>7,416,508</b>	
349							
350	<b>D30</b>	<b>HVAC</b>					
351		Equipment (Option-1 - AHU with Displacement)	253,990	gsf	30.00	7,619,700	





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ESTIMATE DETAIL

			ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890	
						Area of Reno	112,100	
			Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
352			Roof top mounted air handling units				included	
353			Energy Recovery Ventilators (ERVs)				included	
354			Exhaust fans				included	
355			Air to water source heat pump modular chiller				included	
356			Chilled water pumps with VFD				included	
357			Buffer tank				included	
358			Gas fired condensing boilers				included	
359			Heating hot water pumps with VFD				included	
360			Glycol make up units				included	
361			Expansion tanks				included	
362			Air separators				included	
363			Ductless split A/C units				included	
364			Condensate pumps				included	
365			Hot water cabinet unit heaters / Hot water unit heaters				included	
366			Electric cabinet unit heaters / Electric unit heaters				included	
367			Hot water radiant ceiling panels				included	
368			Heat exchanger - <i>assume</i>				included	
369			Central vehicle exhaust system				included	
370			Dust collectors				included	
371								
372			Fuel oil system - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.	1	ls	110,000.00	110,000	
373								
374			Piping system	253,990	gsf	16.00	4,063,840	
375			Chilled water pipe with insulation				included	
376			Heating hot water pipe with insulation				included	
377			Refrigerant pipe with insulation				included	
378			Condensate drain pipe with insulation				included	
379			Valves and specialties (incl. hook-up equipment)				included	
380								
381			Air side system	253,990	gsf	22.00	5,587,780	
382			Galvanized steel duct				included	
383			Black iron 12 ga duct @ Kitchen exhaust hood				included	
384			Duct insulation / Acoustical lining				included	
385			Duct insulation @ Kitchen exhaust				included	
386			Air devices (incl. displacement ventilation diffusers)				included	
387			Dampers				included	
388			Kitchen hood with fire suppression - <i>duct connection only</i>				included	
389			Lab fume hoods - <i>duct connection only</i>				included	
390			VAV boxes with sound trap				included	
391			Boiler flue with insulation				included	
392			Boiler combustion air intake				included	
393			Flues up thru roof for HVAC and Plumbing Shops				included	



South Shore Regional Vocational Technical HS

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Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
394	Clean out doors				included		
395	Flexible connections @ Equipment				included		
396							
397	System controls	253,990	gsf	10.00	2,539,900		
398							
399	Other	253,990	gsf	2.40	609,576		
400	Access doors				included		
401	Vibration isolation / Seismic				included		
402	Temporary HVAC				included		
403	Penetrations and sleeves				included		
404	Core drill, patching, fire stopping				included		
405	Test and balance				included		
406	Clean, flush and test (piping system)				included		
407	System start-up / Commissioning				included		
408	Rigging				included		
409	Equipment handling and material distribution				included		
410	System ID / Valve tags				included		
411	Shop co-ordination drawings				included		
412	O&M manuals				included		
413	Equipment, duct and pipe supports				included		
414	Coordination with other trades				included		
415							
416	<b>Sub Total : HVAC</b>				<b>20,530,796</b>		
417							
418	<b>D40 Fire Protection</b>						
419	<b>21000 Fire Protection</b>						
420	Equipment						
421	Fire pump with controller				not Req'd		
422	Jockey pump with controller				not Req'd		
423							
424	Wet sprinkler system	253,990	gsf	7.50	1,904,925		
425	Wet sprinkler system pipe	1	ls		included		
426	Sprinkler heads	1	ls		included		
427	Alarm check valve assembly	1	ea		included		
428	2-1/2" Fire hose valve in cabinet	1	ls		included		
429	Floor control valves assembly with tamper switch	1	ls		included		
430	Other valves and specialties	1	ls		included		
431	Roof hydrant / Roof manifold	1	ea		included		
432	Siamese connections	1	ls		included		
433	Locked storage fire department cabinet	1	ea		included		
434							
435	Other	253,990	gsf	0.50	126,995		
436	System ID, labels and color coding	1	ls		included		



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION		BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890	
						Area of Reno	112,100	
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
437		Shop co-ordination drawings	1	ls		included		
438		Painting main sprinkler pipe	1	ls		included		
439		Design calculations	1	ls		included		
440		Core drill, patching, fire stopping	1	ls		included		
441		Clean, flush and test	1	ls		included		
442		Commissioning	1	ls		included		
443		Material distribution	1	ls		included		
444		Supports	1	ls		included		
445		Coordination with other trades	1	ls		included		
446								
447		<b>Sub Total : Fire Protection</b>				<b>2,031,920</b>		
448								
449	<b>D50</b>	<b>Electrical</b>						
450		Demolition	253,990	gsf	0.30	76,197		
451								
452		Power Distribution				-		
453		Normal power	253,990	gsf	3.15	800,069		
454		3000 Amp main switchboard	1	ea		included		
455		1600 Amp distribution board	1	ea		included		
456		1200 Amp distribution board	1	ea		included		
457		800 Amp panel, 208V, 2-section	1	ea		included		
458		600 Amp panel, 480V	1	ea		included		
459		600 Amp panel, 208V	1	ea		included		
460		400 Amp panel, 480V	3	ea		included		
461		400 Amp panel, 208V	1	ea		included		
462		400 Amp panel, 208V, 2-section	5	ea		included		
463		225 Amp panel, 480V	1	ea		included		
464		225 Amp panel, 208V, 2-section	7	ea		included		
465		225 Amp panel, 208V	1	ea		included		
466		100 Amp panel, 480V	6	ea		included		
467		100 Amp panel, 208V	9	ea		included		
468		60 Amp panel, 480V	1	ea		included		
469		500 KVA transformer	1	ea		included		
470		300 KVA transformer	1	ea		included		
471		150 KVA transformer	1	ea		included		
472		112.5 KVA transformer	1	ea		included		
473		CT cabinet	1	ea		included		
474		Utility meter	1	ea		by National Grid		
475		Panel mounting assembly	37	ea		included		
476		Transformer support	4	ea		included		
477		Housekeeping concrete pad	3	ea		included		
478								
479		Power Distribution - Emergency Power	253,990	sf	2.25	571,478		



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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
480	1	ea				included	
481	1	ea				included	
482	1	ea				included	
483	1	ls				included	
484	1	ls				included	
485	1	ea				included	
486	1	ls				included	
487	1	ea				included	
488	1	ea				included	
489	2	ea				included	
491	253,990	sf	3.25	825,468			
492							
493							
494	1	ls	15,000.00	15,000			
495							
496	253,990	gsf	9.00	2,285,910			
497	1	ls	40,000.00	40,000			
498							
499	253,990	gsf	2.55	647,675			
500							
501	253,990	sf	3.00	761,970			
502						w/above	
503						w/above	
504						w/above	
505						w/above	
506						w/above	
507							
508	253,990	sf	4.50	1,142,955			
509							
510	253,990	gsf	7.00	1,777,930			
511						w/above	
512							
513	1	ls	25,000.00	25,000			
514							
515	253,990	gsf	0.30	76,197			
516							
517	253,990	gsf	0.30	76,197			
518							
519	253,990	gsf	6.50	1,650,935			
520							
521	253,990	gsf	2.75	698,473			
522						w/above	





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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
523						w/above	
524							
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South Shore Regional Vocational Technical HS

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Option AR-01 900

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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
566							
567		<b>Sub Total : Vehicular Equipment</b>				-	
568							
569	E1090	Other Equipment					
570		Vocational Shops, equipment/furnishings not covered by Owner FF&E	253,990	gsf	2.13	540,000	
571		Stage equipment	253,990	gsf	1.18	300,000	
572							
573		<b>Sub Total : Other Equipment</b>				<b>840,000</b>	
574							
575							
576	<b>E20</b>	<b>Furnishings</b>					
577	E2010	<b>Fixed Furnishings</b>					
578		Casework-teaching spaces, interiors package, Div 064000	253,990	gsf	3.00	761,970	
579		Science/Lab casework	253,990	gsf	7.00	1,777,930	
580		Shops lockers	253,990	gsf	0.63	160,000	
581		Student lockers	253,990	gsf	0.47	120,000	
582		Athletics lockers	253,990	gsf	0.31	80,000	
583							
584		<b>Sub Total : Fixed Furnishings</b>				<b>2,899,900</b>	
585	E2020	<b>Moveable Furnishings</b>					
586		By Owner					
587							
588		<b>Sub Total : Moveable Furnishings</b>				-	
589							
590		<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				<b>End of Trade</b>	<b>\$ 6,965,305</b>
591							
592							
593	<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>					
594	<b>F10</b>	<b>Special Construction</b>					
595		Special Construction			-	-	
596		No work this section				-	
597							
598		<b>Sub Total : Special Construction</b>				-	
599							
600							
601	<b>F20</b>	<b>Selective Building Demolition</b>					
602	F2010	<b>Building Elements Demolition</b>					
603		Extg building, exterior façade materials and structure demo	123,510	sf	3.00	370,530	
604		Extg building, interiors construction and finishes demo	123,510	sf	14.00	1,729,140	
605		Temporary supports and shoring of extg structure to remain	123,510	sf	0.97	120,000	
606		Temporary weather enclosures and protection of extg structure	123,510	sf	4.05	500,000	
607							
608		<b>Sub Total : Building Elements Demolition</b>				<b>2,719,670</b>	



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ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
609							
610	F2020	<b>Hazardous Components Abatement</b>					
611		Hazardous Components Abatement					
612		Building - hazmat removals	123,510	gsf	14.17	1,750,000	
613							
614		<b>Sub Total : Hazardous Components Abatement</b>				<b>1,750,000</b>	
615							
616		<b><u>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</u></b>				<b>End of Trade</b>	<b>\$ 4,469,670</b>
617							
618	<b>G</b>	<b><u>SITEWORK</u></b>					
619	<b>G10</b>	<b>Site Preparation</b>					
620		Clear & grub site; remove grass, shrubs, vegetation, furnishing, etc. Including H&D	371,350	sf	0.15	55,703	
621		Remove trees. Assumed qty	25	ea	450.00	11,250	
622		Remove concrete/asphalt pavement at existing parking lots and drives; inc H&D	215,374	sf	4.00	861,496	
623		Misc site demolition work for site improvements work, work limits	1	ls	92,900.00	92,900	
624		Protection measures	1	ls	204,300.00	204,300	
625		Raise level grade for site improvements work	37,100	cy	65.00	2,411,500	
626							
627		<b>Sub Total : Site Preparation</b>				<b>3,637,149</b>	
628							
629	<b>G20</b>	<b>Site Improvements</b>					
630		New asphalt pavement at parking lots and drives; incl subbase	262,949	sf	3.00	788,847	
631		ADA parking spaces compliance. Assumed qty	4	ea	2,000.00	8,000	
632		New curbing at parking lots, drives, and walks, granite	7,056	lf	47.00	331,632	
633		Concrete pavement at 6' W sidewalks	11,328	sf	15.00	169,920	
634		Concrete pavement at 6' W ADA ramps	1,932	sf	15.00	28,980	
635		Precast pavers	3,454	sf	15.00	51,810	
636		Athletic field improvement, walkways. Assumed qty	5,000	sf	15.00	75,000	
637		Track, running surface, asphalt w/ rubber surface & stiped lanes	15,038	sf	19.00	285,722	
638		Baseball field (sod, soils, sand blanket drainage, root zone)	87,767	sf	2.00	175,534	
639		Irrigation at grassed fields	87,767	sf	0.70	61,437	
640		Baseball, backstop and fencing	1	ls	100,000.00	100,000	
641		Railings/guardrails at ramps and stairs. Assumed qty	650	lf	300.00	195,000	
642		Baseball field, railings. Assumed qty	400	lf	300.00	120,000	
643		Bleachers, baseball. Assumed needed	1	ls	70,000.00	70,000	
644		Bleachers, track. Assumed needed	250	seat	150.00	37,500	
645		Security gates. 26' each. Assumed needed	2	pr	12,000.00	24,000	
646		Press box, 8'x24' @ track. Assumed needed	1	ls	60,000.00	60,000	
647		Lighting, fields, (4) high masts, track/sports field. Assumed needed	1	ls	900,000.00	900,000	
648		Lighting, walks, low/bollard. Assumed needed	1	ls	150,000.00	150,000	
649		Synthetic turf @ Multipurpose field	61,000	sf	12.00	732,000	
650		Street furniture at 1,224 SF drop-off & entry plaza. Allowance	1	Allow	35,000.00	35,000	



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ESTIMATE DETAIL

		ADDITION/RENOVATION OPTION	BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
651		Café furniture at 2,230 SF outdoor area. Allowance	1	Allow	70,000.00	70,000	
652		Outdoor classroom w/built in seating on 6,760 SF lawn area. Allowance	1	Allow	135,000.00	135,000	
653		Landscape restoration/plantings improvements (grass, mulch, plantings)	285,072	sf	4.00	1,140,288	
654		Boardwalk. 80'x8'	640	sf	300.00	192,000	
655		Walkway; between 17 bus spaces parking and driveway. 8' W	4,432	sf	15.00	66,480	
656		Wetland fill	N/A			-	
657		Wetland replication	N/A			-	
658		New trees. Assumed qty	50	ea	1,500.00	75,000	
659		Wetlands protections	1	ls	60,000.00	60,000	
660		4' H Retaining wall construction, precast concrete block w/ back drainage	217	lf	900.00	195,300	
661		Guardrail at above retaining wall	217	lf	300.00	65,100	
662		5' H Retaining wall construction, precast concrete block w/ back drainage	267	lf	1,050.00	280,350	
663		Guardrail at above retaining wall	267	lf	300.00	80,100	
664		Misc site improvements	1	ls	676,000.00	676,000	
665							
666		<b>Sub Total : Site Improvements</b>				<b>7,436,000</b>	
667							
668	<b>G30</b>	<b>Site Mechanical Utilities</b>					
669		<b>Site, Storm</b>					
670		On-site UG storm water detention/management system	1	ls	4,375,000.00	4,375,000	
671		On-site, storm underground structures	1	ls	152,000.00	152,000	
672		On-site, storm underground piping	1	ls	575,000.00	575,000	
673		On-site, swales/vegetation reconstruction, stormwater management	1	ls	130,000.00	130,000	
674							
675		<b>Site, Gas</b>					
676		Gas service line	1	ls	95,000.00	95,000	
677						-	
678		<b>Site, Water</b>					
679		Site domestic water service	1,800	lf	120.00	216,000	
680		Site fire water service	1,500	lf	140.00	210,000	
681		Site fire water, hydrants and service piping	1	ls	455,000.00	455,000	
682						-	
683		<b>Site, Sewer</b>					
684		Wastewater treatment plant facility	1,200	sf	3,333.33	4,000,000	
685		Site sewer service	900	lf	120.00	108,000	
686		On-site, sewer underground structures	1	ls	57,600.00	57,600	
687		On-site, sewer underground piping	1	ls	62,100.00	62,100	
688							
689		<b>Sub Total : Site Mechanical Utilities</b>				<b>10,435,700</b>	
690							
691	<b>G40</b>	<b>Site Electrical Utilities</b>					
692		Incoming service	1	ls	200,000.00	200,000	
693		Utility transformer	1	ea		by National Grid	
694		3000 Amp feeder (PVC sch.40 conduit)				included	
695		800 Amp feeder (PVC sch.40 conduit)				included	





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Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
696						included	
697						included	
698						included	
699						included	
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736	<b>G90</b>						
737							
738							



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Hanover, MA

Option AR-01 900

ESTIMATE DETAIL

ADDITION/RENOVATION OPTION			BUILDING AREA (bgsf)			253,990	ADD/RENO
						Area of New	141,890
						Area of Reno	112,100
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
739		Sub Total : Other Site Construction				-	
740							
741		<b>SUBTOTAL FOR SITEWORK</b>				End of Trade	\$ 23,781,103



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Option NC-2.0 805

ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
1	<b>A</b>	<b>SUBSTRUCTURE</b>					
2	<b>A10</b>	<b>FOUNDATIONS</b>					
3	A1010	Standard Foundations					
4		Foundations/footings, perimeter walls	2,300	lf	-		
5		Formwork	27,600	sf	18.00	496,800	
6		Concrete materials	522	cy	168.00	87,696	
7		Reinforcing for foundations/footings, perimeter walls	30	tn	4,100.00	123,000	
8		Labor for foundations/footings, perimeter walls	522	cy	140.00	73,080	
9		Spread Footings, sizing TBD	270	ea	-		
10		Formwork	270	ea	1,900.00	513,000	
11		Concrete materials	2,352	cy	168.00	395,136	
12		Reinforcing for spread footings	130	tn	4,100.00	533,000	
13		Labor for foundations/footings, spread footings	2,352	cy	140.00	329,280	
14		Strip Interior Footings, sizing TBD	400	lf	-		
15		Formwork	1,600	sf	18.00	28,800	
16		Concrete materials	63	cy	168.00	10,584	
17		Reinforcing for spread footings	10	tn	4,100.00	41,000	
18		Labor for foundations/footings, spread footings	63	cy	140.00	8,820	
19		Other Work			-		
20		Elevator pit	2	ea	45,000.00	90,000	
21		Damproofing to exterior frost wall	13,800	sf	6.00	82,800	
22		Insulation to exterior frost wall	13,800	sf	4.80	66,240	
23		Perimeter foundation wall drainage	2,300	lf	13.00	29,900	
24		Misc concrete work for building layouts	450	cy	900.00	405,000	
25		Div 03 Formwork, trade requirements and coordination	1,500	hr	180.00	270,000	
26		Excavation/Backfill efforts for foundations/footings			-		
27		Over excavation and soil improvements for SOG	26,800	cy	80.00	2,144,000	
28		Raise level grade of SOG, 08', import	35,800	cy	65.00	2,327,000	
29		Excavation/backfill efforts for foundations/footings	8,000	cy	39.00	312,000	
30		Excavation/backfill efforts for interior footings	2,000	cy	39.00	78,000	
31		Excavation/backfill efforts for elev pit	2	ea	4,800.00	9,600	
32		Excavation/backfill efforts for below slab UG plumbing/MEPs	500	cy	39.00	19,500	
33							
34		Sub Total : Standard Foundations				<b>8,474,236</b>	
35							
36	A1020	Special Foundations					
37		No work					
38							
39		Sub Total : Special Foundations				-	
40							
41	A1030	Slab On Grade					
42		Slab on grade, complete	120,545	sf	-		
43		Gravel base/prep for SOG	4,688	cy	37.00	173,456	
44		Concrete materials	1,954	cy	168.00	328,272	
45		Reinforcing	120,545	sf	2.00	241,090	



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Option NC-2.0 805

ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
46	Pour/finish	120,545	sf	12.00	1,446,540	16.72323199	
47	Vapor barrier	120,545	sf	3.00	361,635		
48	Other Work				-		
49	Underslab drainage, SOG	120,545	sf	1.20	144,654		
50	Misc concrete work for building layouts	300	cy	900.00	270,000		
51	Div 03 Flatwork, trade requirements and coordination	3,200	hr	180.00	576,000		
52	Excavation/Backfill efforts for foundations/footings						
53	Excavation/backfill efforts for SOG work	4,500	cy	39.00	175,500		
54							
55	Sub Total : Slab On Grade				3,717,147		
56							
57	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
58	A2010	Basement Excavation					
59		No work this section					
60							
61		Sub Total : Basement Excavation				-	
62							
63	A2020	Basement Walls					
64		No work this section					
65							
66		Sub Total : Basement Walls				-	
67							
68		<b>SUBTOTAL FOR SUBSTRUCTURE</b>			<b>End of Trade</b>	<b>\$ 12,191,383</b>	
69							
70	<b>B</b>	<b>SHELL</b>					
71	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
72	B1010	Floor Construction					
73		Steel for framing	1,670	tn	5,100.00	8,517,000	
74		Steel for exterior enclosures	100	tn	5,100.00	510,000	
75		Steel for interior construction (spans/openings/supports)	50	tn	5,100.00	255,000	
76		Steel, other for building requirements	84	tn	5,100.00	428,400	
77		Metal decking for floors	116,630	sf	4.40	513,172	
78		Slab on decks	116,630	sf	8.00	933,040	
79		Other Work				-	
80		Div 05 Structural Steel, trade requirements and coordination	2,700	hr	190.00	513,000	
81		Fireproofing for floors	116,630	sf	2.80	326,564	
82		Firestopping, floor penetrations	14	dy	3,780.00	52,920	
83							
84		Sub Total : Floor Construction				12,049,096	
85							
86	B1020	Roof Construction					
87		Steel for roof framing	890	tn	5,100.00	4,539,000	
88		Steel, other for building requirements	90	tn	5,100.00	459,000	
89		Metal decking for roof	118,453	sf	4.40	521,193	
90		Other Work				-	





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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
91	Div 05 Structural Steel, trade requirements and coordination	1,500	hr	190.00	285,000		
92	Fireproofing for roof decking	118,453	sf	2.80	331,668		
93	Firestopping, floor penetrations	7	dy	3,780.00	26,460		
94							
95	Sub Total : Roof Construction				<b>6,162,322</b>		
96							
97							
98	<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
99	B2010	Exterior Walls					
100	Exterior wall surface area, TBD based on bldg layouts	69,000	sf				
101	Exterior wall, stud framing	69,000	sf	19.00	1,311,000		
102	Exterior wall, insulation	69,000	sf	13.00	897,000		
103	Exterior wall, AVB	69,000	sf	9.00	621,000		
104	Exterior wall, sheathing	69,000	sf	9.00	621,000		
105	Exterior wall, GWB finish	69,000	sf	5.00	345,000		
106	Exterior wall, soffits/returns	17,250	sf	19.00	327,750		
107	Exterior wall, misc metals/supports	68	tn	4,200.00	285,600		
108	Exterior wall, louvers/vents	170	sf	190.00	32,300		
109	Exterior wall surface area, cladding system, mixed materials	69,000	sf	110.00	7,590,000		
110	Exterior wall surface area, cladding system, soffits/returns/corners/wraps	12,500	sf	120.00	1,500,000		
111	Exterior wall, sealants/caulking of dissimilar materials	69,000	sf	3.50	241,500		
112	Exterior wall, bldg signage "South Shore Regional Vocational High School"	1	ea	18,620.00	18,620		
113							
114	Sub Total : Exterior Walls				<b>13,790,770</b>		
115							
116	B2020	Exterior windows					
117	Exterior window surface area, TBD based on bldg layouts	25,600	sf				
118	Exterior windows, blocking/framing	25,600	sf	5.00	128,000		
119	Exterior glazing system	25,600	sf	200.00	5,120,000		
120	Exterior windows, sealants/caulking of dissimilar materials	25,600	sf	11.20	286,720		
121							
122	Sub Total : Exterior windows				<b>5,534,720</b>		
123							
124	B2030	Exterior doors					
125	Exterior doors including frames and hardware						
126	Vestibule, exterior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880		
127	Vestibule, interior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880		
128	Egress, exterior, (1) 3070 openings	5	ea	3,900.00	19,500		
129	Egress, exterior, (1) 6070 openings	8	ea	4,800.00	38,400		
130	Service Doors, exterior	2	ea	21,000.00	42,000		
131	Shops Doors, exterior	10	ea	25,200.00	252,000		
132	Exterior doors, sealants/caulking of dissimilar materials	5	dy	3,740.00	18,700		
133							
134	Sub Total : Exterior doors				<b>448,360</b>		
135							
136							



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
137	<b>B30</b>	<b>ROOFING</b>					
138	B3010	Roof Coverings					
139		Roof surface area, TBD based on bldg layouts	118,500	sf			
140		Insulation system	118,500	sf	11.00	1,303,500	
141		Roof blocking requirements	118,500	sf	2.00	237,000	
142		Membrane cover	118,500	sf	19.00	2,251,500	
143		Parapets/edge covers	118,500	sf	1.00	118,500	
144		Flashings/counterflashing	118,500	sf	1.70	201,450	
145		Special roof conditions work	118,500	sf	1.70	201,450	
146		MEP penetrations/flashings	118,500	sf	0.30	35,550	
147		Green roofs	23,700	sf	32.00	758,400	
148		Walkway pads	3,900	sf	30.00	117,000	
149		Roof hatch w/ guardrail	3	ea	7,900.00	23,700	
150		Guardrail, fall protection	1	ls	75,000.00	75,000	
151							
152		Sub Total : Roof Coverings				5,323,050	
153							
154		<b>SUBTOTAL FOR SHELL</b>				End of Trade	\$ 43,308,318
155							
156							
157	<b>C</b>	<b>INTERIORS</b>					
158	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
159	C1010	Partitions, Rough Carpentry					
160		New partitions, GWB	207,600	sf	24.00	4,982,400	
161		New partitions, CMU	33,900	sf	35.00	1,186,500	
162		New partitions, glazing w/ frames	3,400	sf	115.00	391,000	
163		New partitions, misc metal for walls	57	tn	4,200.00	239,400	
164		New partitions, HM framed vision panels/openings	140	ea	1,600.00	224,000	
165		New partitions, blocking/framing	244,900	sf	1.00	244,900	
166		New partitions, firestopping	244,900	sf	0.70	171,430	
167		Glazing, interior for HM frames	4,480	sf	55.00	246,400	
168		Interior partitions, sealants/caulking of dissimilar materials	244,900	sf	0.65	159,185	
169							
170		Sub Total : Partitions, Rough Carpentry				7,845,215	
171							
172							
173	C1020	Interior Doors					
174		Frames, HM 3070	270	ea	290.00	78,300	
175		Frames, HM 6070	20	ea	480.00	9,600	
176		Frames, ALUM, 3080	30	ea	1,800.00	54,000	
177		Frames, ALUM, 6080	15	ea	2,400.00	36,000	
178		Doors, WD, 3070	270	ea	880.00	237,600	
179		Doors, WD, 6070	18	ea	1,760.00	31,680	
180		Doors, MTL, 6070	2	ea	480.00	960	
181		Doors, ALUM, 3080	30	ea	6,960.00	208,800	
182		Doors, ALUM, 6080	15	ea	13,920.00	208,800	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
183	Hardware Set 01	270	ea	1,300.00	351,000		
184	Hardware Set 02	18	ea	1,800.00	32,400		
185	Hardware Set 03	2	ea	1,800.00	3,600		
186	Access doors for MEPs	12	ea	900.00	10,800		
187	Glazing, interior for doors	2,430	sf	55.00	133,650		
188	Interior openings, sealants/caulking of dissimilar materials	237,175	gsf	0.40	94,870		
189							
190	Sub Total : Interior Doors				<b>1,492,060</b>	6.29	
191							
192							
193	C1030 Specialties/Fittings						
194	Millwork, interiors package, Div 064000	237,175	gsf	3.00	711,525		
195	Railings systems	237,175	gsf	0.50	118,588		
196	Wall surfacing, tackboards	237,175	gsf	0.75	177,881		
197	Wall surfacing, markerboards	237,175	gsf	0.45	106,729		
198	Wall surfacing, acoustical	237,175	gsf	1.20	284,610		
199	Wall surfacing, specialty	237,175	gsf	0.40	94,870		
200	Door signage, interior	237,175	gsf	0.90	213,458		
201	Door signage, exterior	237,175	gsf	0.03	7,115		
202	Toilet partitions	237,175	gsf	0.45	106,729		
203	Toilet accessories	237,175	gsf	0.70	166,023		
204	Fire Extinguishers	237,175	gsf	0.05	11,859		
205	AED	237,175	gsf	0.02	4,000		
206	Lockers, student	237,175	gsf	0.59	140,000		
207	Lockers, staff	237,175	gsf	0.09	21,346		
208	Specialties/Fittings, other	237,175	gsf	1.15	272,751		
209							
210	Sub Total : Specialties/Fittings				<b>2,437,482</b>		
211							
212	C20 STAIRCASES						
213	C2010 Stair Construction						
214	Stair # 01, egress	2	ft	39,000.00	78,000		
215	Stair # 02, egress	2	ft	39,000.00	78,000		
216	Stair # 03, feature	2	ft	60,000.00	120,000		
217	Stair # 04, egress	3	ft	39,000.00	117,000		
218	Stair # 05, feature	3	ft	60,000.00	180,000		
219	Stair # 06, egress	3	ft	39,000.00	117,000		
220							
221	Sub Total : Stair Construction				<b>690,000</b>		
222							
223	C2020 Stair Finishes						
224	Stair finishes, egress	10	ft	6,800.00	68,000		
225	Stair finishes, feature	5	ft	11,000.00	55,000		
226							
227	Sub Total : Stair Finishes				<b>123,000</b>		
228							



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		NEW CONSTRUCTION OPTION	BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
229	<b>C30</b>	<b>INTERIOR FINISHES</b>					
230		C3010 Wall Finishes					
231		Paint, throughout all interior walls and ceilings surfaces	830,200	sf	0.95	788,690	
232		Wall finishes, tile/stone/hard materials	41,510	sf	30.00	1,245,300	
233		Sound attenuation measures, walls	12,453	sf	31.00	386,043	
234							
235		Sub Total : Wall Finishes				<b>2,420,033</b>	
236							
237		C3020 Floor Finishes					
238		New flooring, mixed materials	225,400	sf	12.00	2,704,800	
239		Moisture mitigation, level 01	120,545	sf	3.00	361,635	
240							
241		Sub Total : Floor Finishes				<b>3,066,435</b>	
242							
243							
244		C3030 Ceiling Finishes					
245		New ceilings, mixed materials	225,400	sf	14.00	3,155,600	
246		Sound attenuation measures, clgs	56,350	sf	14.00	788,900	
247							
248		Sub Total : Ceiling Finishes				<b>3,944,500</b>	
249							
250		<b>SUBTOTAL FOR INTERIORS</b>				<b>End of Trade</b>	<b>\$ 22,018,725</b>
251							
252							
253	<b>D</b>	<b>SERVICES</b>					
254		D10 Elevators & Lifts					
255		Elevator # 01, 3 stop, in-line	1	ea	270,000.00	270,000	
256		Elevator # 02, 4 stop, in-line, F/B	1	ea	425,000.00	425,000	
257							
258		Sub Total : Elevators & Lifts				<b>695,000</b>	
259							
260		D20 Plumbing					
261		Equipment	237,175	gsf	1.50	355,763	
262		(2) High-efficiency gas-fired water heaters				included	
263		Circulation pump				included	
264		Expansion tank				included	
265		Grease interceptors				included	
266		Air compressors				included	
267		Neutralization tank with pH adjustment system (chemical injection)				included	
268		Elevator sump pump with control panel and oil separator				included	
269		Domestic water filtration system - <i>assume</i>				included	
270							
271		Piping system	237,175	gsf	20.80	4,933,240	
272		Domestic water				included	
273		Non-potable water				included	





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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
274						included	
275						included	
276						included	
277						included	
278						included	
279						included	
280						included	
281							
282							
283							
284							
285							
286							
287							
288							
289							
290							
291							
292							
293							
294							
295							
296							
297							
298							
299	<b>D30</b>	<b>HVAC</b>					
300		Equipment (Option-1 - AHU with Displacement)	237,175	gsf	30.00	7,115,250	
301		Roof top mounted air handling units				included	
302		Energy Recovery Ventilators (ERVs)				included	
303		Exhaust fans				included	
304		Air to water source heat pump modular chiller				included	
305		Chilled water pumps with VFD				included	
306		Buffer tank				included	
307		Gas fired condensing boilers				included	
308		Heating hot water pumps with VFD				included	
309		Glycol make up units				included	
310		Expansion tanks				included	
311		Air separators				included	
312		Ductless split A/C units				included	
313		Condensate pumps				included	
314		Hot water cabinet unit heaters / Hot water unit heaters				included	
315		Electric cabinet unit heaters / Electric unit heaters				included	
316		Hot water radiant ceiling panels				included	
317		Heat exchanger - <i>assume</i>				included	
318		Central vehicle exhaust system				included	
		<b>Sub Total : Plumbing</b>				<b>6,925,510</b>	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
319	Dust collectors				included		
320							
321	Fuel oil system - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.	1	ls	110,000.00	110,000		
322							
323	Piping system	237,175	gsf	16.00	3,794,800		
324	Chilled water pipe with insulation				included		
325	Heating hot water pipe with insulation				included		
326	Refrigerant pipe with insulation				included		
327	Condensate drain pipe with insulation				included		
328	Valves and specialties (incl. hook-up equipment)				included		
329							
330	Air side system	237,175	gsf	22.00	5,217,850		
331	Galvanized steel duct				included		
332	Black iron 12 ga duct @ Kitchen exhaust hood				included		
333	Duct insulation / Acoustical lining				included		
334	Duct insulation @ Kitchen exhaust				included		
335	Air devices (incl. displacement ventilation diffusers)				included		
336	Dampers				included		
337	Kitchen hood with fire suppression - duct connection only				included		
338	Lab fume hoods - duct connection only				included		
339	VAV boxes with sound trap				included		
340	Boiler flue with insulation				included		
341	Boiler combustion air intake				included		
342	Flues up thru roof for HVAC and Plumbing Shops				included		
343	Clean out doors				included		
344	Flexible connections @ Equipment				included		
345							
346	System controls	237,175	gsf	10.00	2,371,750		
347							
348	Other	237,175	gsf	2.40	569,220		
349	Access doors				included		
350	Vibration isolation / Seismic				included		
351	Temporary HVAC				included		
352	Penetrations and sleeves				included		
353	Core drill, patching, fire stopping				included		
354	Test and balance				included		
355	Clean, flush and test (piping system)				included		
356	System start-up / Commissioning				included		
357	Rigging				included		
358	Equipment handling and material distribution				included		
359	System ID / Valve tags				included		
360	Shop co-ordination drawings				included		
361	O&M manuals				included		
362	Equipment, duct and pipe supports				included		



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		NEW CONSTRUCTION OPTION		BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
363		Coordination with other trades				included		
364								
365		<b>Sub Total : HVAC</b>				<b>19,178,870</b>		
366								
367	<b>D40</b>	<b>Fire Protection</b>						
368		<b>21000 Fire Protection</b>						
369		Equipment						
370		Fire pump with controller				not Req'd		
371		Jockey pump with controller				not Req'd		
372								
373		Wet sprinkler system	237,175	gsf	7.50	1,778,813		
374		Wet sprinkler system pipe	1	ls		included		
375		Sprinkler heads	1	ls		included		
376		Alarm check valve assembly	1	ea		included		
377		2-1/2" Fire hose valve in cabinet	1	ls		included		
378		Floor control valves assembly with tamper switch	1	ls		included		
379		Other valves and specialties	1	ls		included		
380		Roof hydrant / Roof manifold	1	ea		included		
381		Siamese connections	1	ls		included		
382		Locked storage fire department cabinet	1	ea		included		
383								
384		Other	237,175	gsf	0.50	118,588		
385		System ID, labels and color coding	1	ls		included		
386		Shop co-ordination drawings	1	ls		included		
387		Painting main sprinkler pipe	1	ls		included		
388		Design calculations	1	ls		included		
389		Core drill, patching, fire stopping	1	ls		included		
390		Clean, flush and test	1	ls		included		
391		Commissioning	1	ls		included		
392		Material distribution	1	ls		included		
393		Supports	1	ls		included		
394		Coordination with other trades	1	ls		included		
395								
396		<b>Sub Total : Fire Protection</b>				<b>1,897,400</b>		
397								
398	<b>D50</b>	<b>Electrical</b>						
399		Demolition	237,175	gsf	0.30	71,153		
400								
401		Power Distribution						
402		Normal power	237,175	gsf	3.15	747,101		
403		3000 Amp main switchboard	1	ea		included		
404		1600 Amp distribution board	1	ea		included		
405		1200 Amp distribution board	1	ea		included		
406		800 Amp panel, 208V, 2-section	1	ea		included		
407		600 Amp panel, 480V	1	ea		included		



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
408	600 Amp panel, 208V	1	ea		included		
409	400 Amp panel, 480V	3	ea		included		
410	400 Amp panel, 208V	1	ea		included		
411	400 Amp panel, 208V, 2-section	5	ea		included		
412	225 Amp panel, 480V	1	ea		included		
413	225 Amp panel, 208V, 2-section	7	ea		included		
414	225 Amp panel, 208V	1	ea		included		
415	100 Amp panel, 480V	6	ea		included		
416	100 Amp panel, 208V	9	ea		included		
417	60 Amp panel, 480V	1	ea		included		
418	500 KVA transformer	1	ea		included		
419	300 KVA transformer	1	ea		included		
420	150 KVA transformer	1	ea		included		
421	112.5 KVA transformer	1	ea		included		
422	CT cabinet	1	ea		included		
423	Utility meter	1	ea		by National Grid		
424	Panel mounting assembly	37	ea		included		
425	Transformer support	4	ea		included		
426	Housekeeping concrete pad	3	ea		included		
427							
428	Power Distribution - Emergency Power	237,175	sf	2.25	533,644		
429	400 KW diesel generator	1	ea		included		
430	Sound attenuated enclosure, WP	1	ea		included		
431	72-hr sub-base fuel tank	1	ea		included		
432	Circuit breakers	1	ls		included		
433	Battery charger and block heater	1	ls		included		
434	Remote annunciator	1	ea		included		
435	Unload, unpack, set in place generator and accessories	1	ls		included		
436	600 Amp ATS	1	ea		included		
437	100 Amp ATS	1	ea		included		
438	ATS mounting assembly	2	ea		included		
439							
440	Feeders - Normal and Emergency Power	237,175	sf	3.25	770,819		
441							
442	PV System (future)						
443	3" conduit (empty)	1	ls	15,000.00	15,000		
444							
445	Lighting (interior upgrades)	237,175	gsf	9.00	2,134,575		
446	Lighting (exterior upgrades)	1	ls	40,000.00	40,000		
447							
448	Lighting Control	237,175	gsf	2.55	604,796		
449							
450	Branch Circuitry	237,175	sf	3.00	711,525		
451	Power to equipment and devices (F & I B.O.)				w/above		
452	Food service equipment				w/above		





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
453				w/above			
454				w/above			
455				w/above			
456							
457	237,175	sf	4.50	1,067,288			
458							
459	237,175	gsf	7.00	1,660,225			
460				w/above			
461							
462	1	ls	25,000.00	25,000			
463							
464	237,175	gsf	0.30	71,153			
465							
466	237,175	gsf	0.30	71,153			
467							
468	237,175	gsf	6.50	1,541,638			
469							
470	237,175	gsf	2.75	652,231			
471				w/above			
472				w/above			
473							
474	237,175	gsf	2.50	592,938			
475				w/above			
476				w/above			
477							
478	237,175	gsf	1.75	415,056			
479							
480	1	ls	100,000.00	100,000			
481							
482	237,175	gsf	2.00	474,350			
483				included			
484				included			
485				included			
486				included			
487				included			
488							
489				<b>12,299,643</b>			
490							
491				<b>End of Trade</b>	<b>\$ 40,996,423</b>		
492							
493							
494	<b>E</b>			<b>EQUIPMENT &amp; FURNISHINGS</b>			
495	<b>E10</b>			<b>Equipment</b>			
496	E1010			Commercial Equipment			
497				Appliances, residential, staff areas			
				237,175	gsf	0.06	15,000



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION	
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades			
498			Food Service Equipment, Cafeteria	237,175	gsf	5.50	1,304,463	
499			Food Service Equipment, Shops	237,175	gsf	2.00	474,350	
500			Teaching, screens/projections	237,175	gsf	2.00	474,350	
501			Athletic equipment	237,175	gsf	0.42	100,000	
502								
503			<b>Sub Total : Commercial Equipment</b>				<b>2,368,163</b>	
504								
505	E1020		Institutional Equipment				-	
506			Bleachers	1	ls	225,000.00	225,000	
507			Basketball hoops	6	ea	14,000.00	84,000	
508			Auditorium seating, retractable	300	ea	900.00	270,000	
509			Auditorium seating, fixed	100	ea	490.00	49,000	
510								
511			<b>Sub Total : Institutional Equipment</b>				<b>628,000</b>	
512								
513	E1030		Vehicular Equipment					
514			Not included				-	
515								
516			<b>Sub Total : Vehicular Equipment</b>				-	
517								
518	E1090		Other Equipment					
519			Vocational Shops, equipment/furnishings not covered by Owner FF&E	237,175	gsf	2.28	540,000	
520			Stage equipment	237,175	gsf	1.26	300,000	
521								
522			<b>Sub Total : Other Equipment</b>				<b>840,000</b>	
523								
524								
525	E20		<b>Furnishings</b>					
526	E2010		<b>Fixed Furnishings</b>					
527			Casework-teaching spaces, interiors package, Div 064000	237,175	gsf	3.00	711,525	
528			Science/Lab casework	237,175	gsf	7.00	1,660,225	
529			Shops lockers	237,175	gsf	0.67	160,000	
530			Student lockers	237,175	gsf	0.51	120,000	
531			Athletics lockers	237,175	gsf	0.34	80,000	
532								
533			<b>Sub Total : Fixed Furnishings</b>				<b>2,731,750</b>	
534	E2020		<b>Moveable Furnishings</b>					
535			By Owner					
536								
537			<b>Sub Total : Moveable Furnishings</b>				-	
538								
539			<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				<b>End of Trade</b>	<b>\$ 6,567,913</b>
540								
541								
542	F		<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>					



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
<b>F10</b>	<b>Special Construction</b>						
		Special Construction		-			
		No work this section		-			
		<b>Sub Total : Special Construction</b>		-			
<b>F20</b>	<b>Selective Building Demolition</b>						
F2010	<b>Building Elements Demolition</b>						
		Building Demolition					
		Demolition of extg school structure, above grade	123,510	sf	13.00	1,605,630	
		<b>Sub Total : Building Elements Demolition</b>				<b>1,605,630</b>	
F2020	<b>Hazardous Components Abatement</b>						
		Hazardous Components Abatement					
		Building - hazmat removals	123,510	gsf	14.17	1,750,000	
		<b>Sub Total : Hazardous Components Abatement</b>				<b>1,750,000</b>	
		<b>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				<b>End of Trade \$ 3,355,630</b>	
<b>G</b>	<b>SITWORK</b>						
<b>G10</b>	<b>Site Preparation</b>						
		Clear & grub site; remove grass, shrubs, vegetation, furnishing, etc. Including H&D	459,476	sf	0.15	68,921	
		Remove trees. Assumed qty	25	ea	450.00	11,250	
		Remove concrete/asphalt pavement at existing parking lots and drives; inc H&D	215,374	sf	4.00	861,496	
		Misc site demolition work for site improvements work, work limits	1	ls	141,300.00	141,300	
		Protection measures	1	ls	216,600.00	216,600	
		Raise level grade for site improvements work	37,100	cy	65.00	2,411,500	
		<b>Sub Total : Site Preparation</b>				<b>3,711,067</b>	
<b>G20</b>	<b>Site Improvements</b>						
		New asphalt pavement at parking lots and drives; incl subbase	254,817	sf	3.00	764,451	
		ADA parking spaces compliance. Assumed qty	4	ea	2,000.00	8,000	
		New curbing at parking lots, drives, and walks, granite	9,760	lf	47.00	458,720	
		Concrete pavement	20,105	sf	15.00	301,575	
		Athletic field improvement, walkways. Assumed qty	5,000	sf	15.00	75,000	
		Track, running surface, asphalt w/ rubber surface	25,687	sf	24.00	616,488	
		Baseball field (grass, soils, sand blanket drainage, root zone)	70,544	sf	2.00	141,088	
		Softball field (grass, soils, sand blanket drainage, root zone)	41,466	sf	2.00	82,932	
		Irrigation at grassed fields	112,010	sf	0.70	78,407	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
586	1	ls	90,000.00	90,000			
587	1	ls	71,000.00	71,000			
588	900	lf	300.00	270,000			
589	400	lf	300.00	120,000			
590	250	lf	300.00	75,000			
591	1	ls	70,000.00	70,000			
592	1	ls	70,000.00	70,000			
593	250	seat	150.00	37,500			
594	2	pr	12,000.00	24,000			
595	1	ls	60,000.00	60,000			
596	1	ls	900,000.00	900,000			
597	1	ls	150,000.00	150,000			
598	81,894	sf	12.00	982,728			
599	326,585	sf	4.00	1,306,340			
600	1,280	sf	300.00	384,000			
601	12,800	sf	15.00	192,000			
602	750	sf	5.00	3,750			
603	1,500	sf	10.00	15,000			
604	50	ea	1,500.00	75,000			
605	1	ls	60,000.00	60,000			
606	200	lf	900.00	180,000			
607	1	ls	766,300.00	766,300			
608	1	below	-	-			
609	1,800	sf	400.00	720,000			
610	1,800	sf	300.00	540,000			
611	900	sf	300.00	270,000			
612							
613							
614							
615	<b>G30</b>	<b>Site Mechanical Utilities</b>					
616		<b>Site, Storm</b>					
617	1	ls	4,375,000.00	4,375,000			
618	1	ls	152,000.00	152,000			
619	1	ls	575,000.00	575,000			
620	1	ls	130,000.00	130,000			
621							
622		<b>Site, Gas</b>					
623	1	ls	95,000.00	95,000			
624							
625		<b>Site, Water</b>					
626	1,800	lf	120.00	216,000			
627	1,500	lf	140.00	210,000			
628	1	ls	455,000.00	455,000			
629							
630		<b>Site, Sewer</b>					
631	1,200	sf	3,333.33	4,000,000			
		<b>Sub Total : Site Improvements</b>		<b>9,959,279</b>			





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
632	900	lf	120.00	108,000			
633	1	ls	57,600.00	57,600			
634	1	ls	62,100.00	62,100			
635							
636	<b>Sub Total : Site Mechanical Utilities</b>			<b>10,435,700</b>			
637							
<b>G40</b>	<b>Site Electrical Utilities</b>						
639	1	ls	200,000.00	200,000			
640	1	ea		by National Grid			
641				included			
642				included			
643				included			
644				included			
645				included			
646				included			
647							
648	1	ls	150,000.00	150,000	-		
649	1	ea		included			
650	1	ea		included			
651	50	ea		included			
652	1	ls		included	-		
653							
654	1	ls	270,000.00	270,000			
655				included			
656				included			
657				included			
658				included			
659				included			
660							
661					-		
662	1	ea	13,000.00	13,000			
663	1	ea	7,000.00	7,000			
664	1	ea	12,324.00	12,324			
665	5	ea	155.00	775			
666	1	ea	506.00	506			
667	1	ls	1,200,000.00	1,200,000			
668	4	ea		included			
669	8	ea		included			
670	3	ea		included			
671	1	ea		included			
672	12	ea		included			
673	12	ea		included			
674	12	ea	6,500.00	78,000			
675	1	ls	10,000.00	10,000			
676	3,000.00	lf	59.51	178,530			



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			237,175	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
677	# 3/0 wire	9,000.00	lf	11.49	103,410		
678	# 4 wire	3,000.00	lf	4.57	13,710		
679	Miscellaneous 120V and 208V connections	1	ls	35,000.00	35,000		
680							
681	<b>Sub Total : Site Electrical Utilities</b>				<b>2,272,255</b>		
682							
683	<b>G90 Other Site Construction</b>						
684	No work this section						
685							
686	<b>Sub Total : Other Site Construction</b>				-		
687							
688	<b><u>SUBTOTAL FOR SITEWORK</u></b>				<b>End of Trade</b>	<b>\$ 26,378,301</b>	



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
1	<b>A</b>	<b>SUBSTRUCTURE</b>					
2	<b>A10</b>	<b>FOUNDATIONS</b>					
3	A1010	Standard Foundations					
4		Foundations/footings, perimeter walls	2,325	lf	-		
5		Formwork	27,900	sf	18.00	502,200	
6		Concrete materials	528	cy	168.00	88,704	
7		Reinforcing for foundations/footings, perimeter walls	30	tn	4,100.00	123,000	
8		Labor for foundations/footings, perimeter walls	528	cy	140.00	73,920	
9		Spread Footings, sizing TBD	290	ea	-	-	
10		Formwork	290	ea	1,900.00	551,000	
11		Concrete materials	2,527	cy	168.00	424,536	
12		Reinforcing for spread footings	140	tn	4,100.00	574,000	
13		Labor for foundations/footings, spread footings	2,527	cy	140.00	353,780	
14		Strip Interior Footings, sizing TBD	400	lf	-	-	
15		Formwork	1,600	sf	18.00	28,800	
16		Concrete materials	63	cy	168.00	10,584	
17		Reinforcing for spread footings	10	tn	4,100.00	41,000	
18		Labor for foundations/footings, spread footings	63	cy	140.00	8,820	
19		Other Work			-	-	
20		Elevator pit	2	ea	45,000.00	90,000	
21		Damproofing to exterior frost wall	13,950	sf	6.00	83,700	
22		Insulation to exterior frost wall	13,950	sf	4.80	66,960	
23		Perimeter foundation wall drainage	2,325	lf	13.00	30,225	
24		Misc concrete work for building layouts	470	cy	900.00	423,000	
25		Div 03 Formwork, trade requirements and coordination	1,600	hr	180.00	288,000	
26		Excavation/Backfill efforts for foundations/footings			-	-	
27		Over excavation and soil improvements for SOG	28,200	cy	80.00	2,256,000	
28		Raise level grade of SOG, 08', import	37,600	cy	65.00	2,444,000	
29		Excavation/backfill efforts for foundations/footings	8,600	cy	39.00	335,400	
30		Excavation/backfill efforts for interior footings	2,200	cy	39.00	85,800	
31		Excavation/backfill efforts for elev pit	2	ea	4,800.00	9,600	
32		Excavation/backfill efforts for below slab UG plumbing/MEPs	550	cy	39.00	21,450	
33							
34		Sub Total : Standard Foundations				<b>8,914,479</b>	
35							
36	A1020	Special Foundations					
37		No work					
38							
39		Sub Total : Special Foundations				-	
40							
41	A1030	Slab On Grade					
42		Slab on grade, complete	126,776	sf	-	-	
43		Gravel base/prep for SOG	4,931	cy	37.00	182,447	
44		Concrete materials	2,055	cy	168.00	345,240	
45		Reinforcing	126,776	sf	2.00	253,552	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
46	Pour/finish	126,776	sf	9.00	1,140,984	13.72322837	
47	Vapor barrier	126,776	sf	3.00	380,328		
48	Other Work				-		
49	Underslab drainage, SOG	126,776	sf	1.20	152,131		
50	Misc concrete work for building layouts	200	cy	900.00	180,000		
51	Div 03 Flatwork, trade requirements and coordination	800	hr	180.00	144,000		
52	Excavation/Backfill efforts for foundations/footings						
53	Excavation/backfill efforts for SOG work	4,700	cy	39.00	183,300		
54							
55	Sub Total : Slab On Grade				2,961,982		
56							
57	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
58	A2010	Basement Excavation					
59		No work this section					
60							
61		Sub Total : Basement Excavation				-	
62							
63	A2020	Basement Walls					
64		No work this section					
65							
66		Sub Total : Basement Walls				-	
67							
68		<b>SUBTOTAL FOR SUBSTRUCTURE</b>			<b>End of Trade</b>	<b>\$ 11,876,461</b>	
69							
70	<b>B</b>	<b>SHELL</b>					
71	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
72	B1010	Floor Construction					
73		Steel for framing	1,800	tn	5,100.00	9,180,000	
74		Steel for exterior enclosures	110	tn	5,100.00	561,000	
75		Steel for interior construction (spans/openings/supports)	60	tn	5,100.00	306,000	
76		Steel, other for building requirements	90	tn	5,100.00	459,000	
77		Metal decking for floors	129,574	sf	4.40	570,126	
78		Slab on decks	129,574	sf	8.00	1,036,592	
79		Other Work				-	
80		Div 05 Structural Steel, trade requirements and coordination	3,000	hr	190.00	570,000	
81		Fireproofing for floors	129,574	sf	2.80	362,807	
82		Firestopping, floor penetrations	15	dy	3,780.00	56,700	
83							
84		Sub Total : Floor Construction				13,102,225	
85							
86	B1020	Roof Construction					
87		Steel for roof framing	870	tn	5,100.00	4,437,000	
88		Steel, other for building requirements	90	tn	5,100.00	459,000	
89		Metal decking for roof	123,591	sf	4.40	543,800	
90		Other Work				-	





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ESTIMATE DETAIL

		NEW CONSTRUCTION OPTION	BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
91		Div 05 Structural Steel, trade requirements and coordination	1,500	hr	190.00	285,000	
92		Fireproofing for roof decking	123,591	sf	2.80	346,055	
93		Firestopping, floor penetrations	7	dy	3,780.00	26,460	
94							
95		Sub Total : Roof Construction				6,097,315	
96							
97							
98	<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
99	B2010	Exterior Walls					
100		Exterior wall surface area, TBD based on bldg layouts	64,000	sf			
101		Exterior wall, stud framing	64,000	sf	19.00	1,216,000	
102		Exterior wall, insulation	64,000	sf	13.00	832,000	
103		Exterior wall, AVB	64,000	sf	9.00	576,000	
104		Exterior wall, sheathing	64,000	sf	9.00	576,000	
105		Exterior wall, GWB finish	64,000	sf	5.00	320,000	
106		Exterior wall, soffits/returns	16,000	sf	19.00	304,000	
107		Exterior wall, misc metals/supports	74	tn	4,200.00	310,800	
108		Exterior wall, louvers/vents	160	sf	190.00	30,400	
109		Exterior wall surface area, cladding system, mixed materials	64,000	sf	110.00	7,040,000	
110		Exterior wall surface area, cladding system, soffits/returns/corners/wraps	11,600	sf	120.00	1,392,000	
111		Exterior wall, sealants/caulking of dissimilar materials	64,000	sf	4.10	262,400	
112		Exterior wall, bldg signage "South Shore Regional Vocational High School"	1	ea	18,620.00	18,620	
113							
114		Sub Total : Exterior Walls				12,878,220	
115							
116	B2020	Exterior windows					
117		Exterior window surface area, TBD based on bldg layouts	25,600	sf			
118		Exterior windows, blocking/framing	25,600	sf	5.00	128,000	
119		Exterior glazing system	25,600	sf	200.00	5,120,000	
120		Exterior windows, sealants/caulking of dissimilar materials	25,600	sf	12.10	309,760	
121							
122		Sub Total : Exterior windows				5,557,760	
123							
124	B2030	Exterior doors					
125		Exterior doors including frames and hardware					
126		Vestibule, exterior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
127		Vestibule, interior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
128		Egress, exterior, (1) 3070 openings	5	ea	3,900.00	19,500	
129		Egress, exterior, (1) 6070 openings	8	ea	4,800.00	38,400	
130		Service Doors, exterior	2	ea	21,000.00	42,000	
131		Shops Doors, exterior	10	ea	25,200.00	252,000	
132		Exterior doors, sealants/caulking of dissimilar materials	6	dy	3,740.00	22,440	
133							
134		Sub Total : Exterior doors				452,100	
135							
136							



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
137	<b>B30</b>	<b>ROOFING</b>					
138	B3010	Roof Coverings					
139		Roof surface area, TBD based on bldg layouts	123,600	sf			
140		Insulation system	123,600	sf	11.00	1,359,600	
141		Roof blocking requirements	123,600	sf	2.00	247,200	
142		Membrane cover	123,600	sf	19.00	2,348,400	
143		Parapets/edge covers	123,600	sf	1.00	123,600	
144		Flashings/counterflashing	123,600	sf	1.70	210,120	
145		Special roof conditions work	123,600	sf	1.70	210,120	
146		MEP penetrations/flashings	123,600	sf	0.30	37,080	
147		Green roofs	24,720	sf	32.00	791,040	
148		Walkway pads	3,900	sf	30.00	117,000	
149		Roof hatch w/ guardrail	3	ea	7,900.00	23,700	
150		Guardrail, fall protection	1	ls	75,000.00	75,000	
151							
152		Sub Total : Roof Coverings				5,542,860	
153							
154		<b>SUBTOTAL FOR SHELL</b>				End of Trade	\$ 43,630,480
155							
156							
157	<b>C</b>	<b>INTERIORS</b>					
158	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
159	C1010	Partitions, Rough Carpentry					
160		New partitions, GWB	224,400	sf	24.00	5,385,600	
161		New partitions, CMU	36,700	sf	35.00	1,284,500	
162		New partitions, glazing w/ frames	3,700	sf	115.00	425,500	
163		New partitions, misc metal for walls	62	tn	4,200.00	260,400	
164		New partitions, HM framed vision panels/openings	150	ea	1,600.00	240,000	
165		New partitions, blocking/framing	264,800	sf	1.00	264,800	
166		New partitions, firestopping	264,800	sf	0.70	185,360	
167		Glazing, interior for HM frames	4,800	sf	55.00	264,000	
168		Interior partitions, sealants/caulking of dissimilar materials	264,800	sf	0.65	172,120	
169							
170		Sub Total : Partitions, Rough Carpentry				8,482,280	
171							
172							
173	C1020	Interior Doors					
174		Frames, HM 3070	290	ea	290.00	84,100	
175		Frames, HM 6070	20	ea	480.00	9,600	
176		Frames, ALUM, 3080	33	ea	1,800.00	59,400	
177		Frames, ALUM, 6080	17	ea	2,400.00	40,800	
178		Doors, WD, 3070	290	ea	880.00	255,200	
179		Doors, WD, 6070	18	ea	1,760.00	31,680	
180		Doors, MTL, 6070	2	ea	480.00	960	
181		Doors, ALUM, 3080	33	ea	6,960.00	229,680	
182		Doors, ALUM, 6080	17	ea	13,920.00	236,640	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
183	Hardware Set 01	290	ea	1,300.00	377,000		
184	Hardware Set 02	18	ea	1,800.00	32,400		
185	Hardware Set 03	2	ea	1,800.00	3,600		
186	Access doors for MEPs	13	ea	900.00	11,700		
187	Glazing, interior for doors	2,610	sf	55.00	143,550		
188	Interior openings, sealants/caulking of dissimilar materials	256,350	gsf	0.40	102,540		
189							
190	Sub Total : Interior Doors				<b>1,618,850</b>	6.31	
191							
192							
193	C1030 Specialties/Fittings						
194	Millwork, interiors package, Div 064000	256,350	gsf	3.00	769,050		
195	Railings systems	256,350	gsf	0.50	128,175		
196	Wall surfacing, tackboards	256,350	gsf	0.75	192,263		
197	Wall surfacing, markerboards	256,350	gsf	0.45	115,358		
198	Wall surfacing, acoustical	256,350	gsf	1.20	307,620		
199	Wall surfacing, specialty	256,350	gsf	0.40	102,540		
200	Door signage, interior	256,350	gsf	0.90	230,715		
201	Door signage, exterior	256,350	gsf	0.03	7,691		
202	Toilet partitions	256,350	gsf	0.45	115,358		
203	Toilet accessories	256,350	gsf	0.70	179,445		
204	Fire Extinguishers	256,350	gsf	0.05	12,818		
205	AED	256,350	gsf	0.02	4,000		
206	Lockers, student	256,350	gsf	0.55	140,000		
207	Lockers, staff	256,350	gsf	0.09	23,072		
208	Specialties/Fittings, other	256,350	gsf	1.15	294,803		
209							
210	Sub Total : Specialties/Fittings				<b>2,622,905</b>		
211							
212	C20 STAIRCASES						
213	C2010 Stair Construction						
214	Stair # 01, egress	2	ft	39,000.00	78,000		
215	Stair # 02, egress	2	ft	39,000.00	78,000		
216	Stair # 03, feature	2	ft	60,000.00	120,000		
217	Stair # 04, egress	3	ft	39,000.00	117,000		
218	Stair # 05, feature	3	ft	60,000.00	180,000		
219	Stair # 06, egress	3	ft	39,000.00	117,000		
220							
221	Sub Total : Stair Construction				<b>690,000</b>		
222							
223	C2020 Stair Finishes						
224	Stair finishes, egress	10	ft	6,800.00	68,000		
225	Stair finishes, feature	5	ft	11,000.00	55,000		
226							
227	Sub Total : Stair Finishes				<b>123,000</b>		
228							



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description			Quantity	Unit	Unit Price	Total \$	Subtotal Trades
229	<b>C30</b>	<b>INTERIOR FINISHES</b>					
230	C3010	Wall Finishes					
231		Paint, throughout all interior walls and ceilings surfaces	897,300	sf	0.95	852,435	
232		Wall finishes, tile/stone/hard materials	44,865	sf	30.00	1,345,950	
233		Sound attenuation measures, walls	13,460	sf	31.00	417,245	
234							
235		Sub Total : Wall Finishes				<b>2,615,630</b>	
236							
237	C3020	Floor Finishes					
238		New flooring, mixed materials	243,600	sf	12.00	2,923,200	
239		Moisture mitigation, level 01	126,776	sf	3.00	380,328	
240							
241		Sub Total : Floor Finishes				<b>3,303,528</b>	
242							
243							
244	C3030	Ceiling Finishes					
245		New ceilings, mixed materials	243,600	sf	14.00	3,410,400	
246		Sound attenuation measures, clgs	60,900	sf	14.00	852,600	
247							
248		Sub Total : Ceiling Finishes				<b>4,263,000</b>	
249							
250		<b>SUBTOTAL FOR INTERIORS</b>				<b>End of Trade</b>	<b>\$ 23,719,192</b>
251							
252							
253	<b>D</b>	<b>SERVICES</b>					
254	<b>D10</b>	<b>Elevators &amp; Lifts</b>					
255		Elevator # 01, 3 stop, in-line	1	ea	270,000.00	270,000	
256		Elevator # 02, 4 stop, in-line, F/B	1	ea	425,000.00	425,000	
257							
258		Sub Total : Elevators & Lifts				<b>695,000</b>	
259							
260	<b>D20</b>	<b>Plumbing</b>					
261		Equipment	256,350	gsf	1.50	384,525	
262		(2) High-efficiency gas-fired water heaters				included	
263		Circulation pump				included	
264		Expansion tank				included	
265		Grease interceptors				included	
266		Air compressors				included	
267		Neutralization tank with pH adjustment system (chemical injection)				included	
268		Elevator sump pump with control panel and oil separator				included	
269		Domestic water filtration system - <i>assume</i>				included	
270							
271		Piping system	256,350	gsf	20.80	5,332,080	
272		Domestic water				included	
273		Non-potable water				included	





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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
274	Sanitary waste and vent				included		
275	Laboratory waste and vent				included		
276	Kitchen grease waste system				included		
277	Storm water				included		
278	Natural gas				included		
279	Compressed air				included		
280	Valves and specialties (incl. hook-up equipment)				included		
281							
282	Plumbing fixtures (incl. fixture rough-in)	256,350	gsf	5.40	1,384,290		
283							
284	Other	256,350	gsf	1.50	384,525		
285	Access door	1	ls		incl above		
286	Penetrations and sleeves	1	ls		incl above		
287	Core drill, patching, fire stopping	1	ls		incl above		
288	Clean, flush and test	1	ls		incl above		
289	Disinfection	1	ls		incl above		
290	System validate / Certification	1	ls		incl above		
291	Equipment handling and material distribution	1	ls		incl above		
292	System ID / Valve tags	1	ls		incl above		
293	Shop co-ordination drawings	1	ls		incl above		
294	Supports	1	ls		incl above		
295	Coordination with other trades	1	ls		incl above		
296							
297							
298							
299	<b>D30 HVAC</b>						
300	Equipment (Option-1 - AHU with Displacement)	256,350	gsf	30.00	7,690,500		
301	Roof top mounted air handling units				included		
302	Energy Recovery Ventilators (ERVs)				included		
303	Exhaust fans				included		
304	Air to water source heat pump modular chiller				included		
305	Chilled water pumps with VFD				included		
306	Buffer tank				included		
307	Gas fired condensing boilers				included		
308	Heating hot water pumps with VFD				included		
309	Glycol make up units				included		
310	Expansion tanks				included		
311	Air separators				included		
312	Ductless split A/C units				included		
313	Condensate pumps				included		
314	Hot water cabinet unit heaters / Hot water unit heaters				included		
315	Electric cabinet unit heaters / Electric unit heaters				included		
316	Hot water radiant ceiling panels				included		
317	Heat exchanger - <i>assume</i>				included		
318	Central vehicle exhaust system				included		



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
319	Dust collectors				included		
320							
321	Fuel oil system - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.	1	ls	110,000.00	110,000		
322							
323	Piping system	256,350	gsf	16.00	4,101,600		
324	Chilled water pipe with insulation				included		
325	Heating hot water pipe with insulation				included		
326	Refrigerant pipe with insulation				included		
327	Condensate drain pipe with insulation				included		
328	Valves and specialties (incl. hook-up equipment)				included		
329							
330	Air side system	256,350	gsf	22.00	5,639,700		
331	Galvanized steel duct				included		
332	Black iron 12 ga duct @ Kitchen exhaust hood				included		
333	Duct insulation / Acoustical lining				included		
334	Duct insulation @ Kitchen exhaust				included		
335	Air devices (incl. displacement ventilation diffusers)				included		
336	Dampers				included		
337	Kitchen hood with fire suppression - duct connection only				included		
338	Lab fume hoods - duct connection only				included		
339	VAV boxes with sound trap				included		
340	Boiler flue with insulation				included		
341	Boiler combustion air intake				included		
342	Flues up thru roof for HVAC and Plumbing Shops				included		
343	Clean out doors				included		
344	Flexible connections @ Equipment				included		
345							
346	System controls	256,350	gsf	10.00	2,563,500		
347							
348	Other	256,350	gsf	2.40	615,240		
349	Access doors				included		
350	Vibration isolation / Seismic				included		
351	Temporary HVAC				included		
352	Penetrations and sleeves				included		
353	Core drill, patching, fire stopping				included		
354	Test and balance				included		
355	Clean, flush and test (piping system)				included		
356	System start-up / Commissioning				included		
357	Rigging				included		
358	Equipment handling and material distribution				included		
359	System ID / Valve tags				included		
360	Shop co-ordination drawings				included		
361	O&M manuals				included		
362	Equipment, duct and pipe supports				included		



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		NEW CONSTRUCTION OPTION		BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
363		Coordination with other trades				included		
364								
365		<b>Sub Total : HVAC</b>				<b>20,720,540</b>		
366								
367	<b>D40</b>	<b>Fire Protection</b>						
368		<b>21000 Fire Protection</b>						
369		Equipment						
370		Fire pump with controller				not Req'd		
371		Jockey pump with controller				not Req'd		
372								
373		Wet sprinkler system	256,350	gsf	7.50	1,922,625		
374		Wet sprinkler system pipe	1	ls		included		
375		Sprinkler heads	1	ls		included		
376		Alarm check valve assembly	1	ea		included		
377		2-1/2" Fire hose valve in cabinet	1	ls		included		
378		Floor control valves assembly with tamper switch	1	ls		included		
379		Other valves and specialties	1	ls		included		
380		Roof hydrant / Roof manifold	1	ea		included		
381		Siamese connections	1	ls		included		
382		Locked storage fire department cabinet	1	ea		included		
383								
384		Other	256,350	gsf	0.50	128,175		
385		System ID, labels and color coding	1	ls		included		
386		Shop co-ordination drawings	1	ls		included		
387		Painting main sprinkler pipe	1	ls		included		
388		Design calculations	1	ls		included		
389		Core drill, patching, fire stopping	1	ls		included		
390		Clean, flush and test	1	ls		included		
391		Commissioning	1	ls		included		
392		Material distribution	1	ls		included		
393		Supports	1	ls		included		
394		Coordination with other trades	1	ls		included		
395								
396		<b>Sub Total : Fire Protection</b>				<b>2,050,800</b>		
397								
398	<b>D50</b>	<b>Electrical</b>						
399		Demolition	256,350	gsf	0.30	76,905		
400								
401		Power Distribution						
402		Normal power	256,350	gsf	3.15	807,503		
403		3000 Amp main switchboard	1	ea		included		
404		1600 Amp distribution board	1	ea		included		
405		1200 Amp distribution board	1	ea		included		
406		800 Amp panel, 208V, 2-section	1	ea		included		
407		600 Amp panel, 480V	1	ea		included		



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
408	600 Amp panel, 208V	1	ea		included		
409	400 Amp panel, 480V	3	ea		included		
410	400 Amp panel, 208V	1	ea		included		
411	400 Amp panel, 208V, 2-section	5	ea		included		
412	225 Amp panel, 480V	1	ea		included		
413	225 Amp panel, 208V, 2-section	7	ea		included		
414	225 Amp panel, 208V	1	ea		included		
415	100 Amp panel, 480V	6	ea		included		
416	100 Amp panel, 208V	9	ea		included		
417	60 Amp panel, 480V	1	ea		included		
418	500 KVA transformer	1	ea		included		
419	300 KVA transformer	1	ea		included		
420	150 KVA transformer	1	ea		included		
421	112.5 KVA transformer	1	ea		included		
422	CT cabinet	1	ea		included		
423	Utility meter	1	ea		by National Grid		
424	Panel mounting assembly	37	ea		included		
425	Transformer support	4	ea		included		
426	Housekeeping concrete pad	3	ea		included		
427							
428	Power Distribution - Emergency Power	256,350	sf	2.25	576,788		
429	400 KW diesel generator	1	ea		included		
430	Sound attenuated enclosure, WP	1	ea		included		
431	72-hr sub-base fuel tank	1	ea		included		
432	Circuit breakers	1	ls		included		
433	Battery charger and block heater	1	ls		included		
434	Remote annunciator	1	ea		included		
435	Unload, unpack, set in place generator and accessories	1	ls		included		
436	600 Amp ATS	1	ea		included		
437	100 Amp ATS	1	ea		included		
438	ATS mounting assembly	2	ea		included		
439							
440	Feeders - Normal and Emergency Power	256,350	sf	3.25	833,138		
441							
442	PV System (future)						
443	3" conduit (empty)	1	ls	15,000.00	15,000		
444							
445	Lighting (interior upgrades)	256,350	gsf	9.00	2,307,150		
446	Lighting (exterior upgrades)	1	ls	40,000.00	40,000		
447							
448	Lighting Control	256,350	gsf	2.55	653,693		
449							
450	Branch Circuitry	256,350	sf	3.00	769,050		
451	Power to equipment and devices (F & I B.O.)				w/above		
452	Food service equipment				w/above		





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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
453				w/above			
454				w/above			
455				w/above			
456							
457	256,350	sf	4.50	1,153,575			
458							
459	256,350	gsf	7.00	1,794,450			
460				w/above			
461							
462	1	ls	25,000.00	25,000			
463							
464	256,350	gsf	0.30	76,905			
465							
466	256,350	gsf	0.30	76,905			
467							
468	256,350	gsf	6.50	1,666,275			
469							
470	256,350	gsf	2.75	704,963			
471				w/above			
472				w/above			
473							
474	256,350	gsf	2.50	640,875			
475				w/above			
476				w/above			
477							
478	256,350	gsf	1.75	448,613			
479							
480	1	ls	100,000.00	100,000			
481							
482	256,350	gsf	2.00	512,700			
483				included			
484				included			
485				included			
486				included			
487				included			
488							
489				<b>13,279,485</b>			
490							
491				<b>End of Trade</b>	<b>\$ 44,231,245</b>		
492							
493							
494	<b>E</b>			<b>EQUIPMENT &amp; FURNISHINGS</b>			
495	<b>E10</b>			<b>Equipment</b>			
496	E1010			Commercial Equipment			
497				Appliances, residential, staff areas			
				256,350	gsf	0.06	15,000



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION	
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades			
498			Food Service Equipment, Cafeteria	256,350	gsf	5.50	1,409,925	
499			Food Service Equipment, Shops	256,350	gsf	2.00	512,700	
500			Teaching, screens/projections	256,350	gsf	2.00	512,700	
501			Athletic equipment	256,350	gsf	0.39	100,000	
502								
503			<b>Sub Total : Commercial Equipment</b>				<b>2,550,325</b>	
504								
505	E1020		Institutional Equipment				-	
506			Bleachers	1	ls	225,000.00	225,000	
507			Basketball hoops	6	ea	14,000.00	84,000	
508			Auditorium seating, retractable	350	ea	900.00	315,000	
509			Auditorium seating, fixed	150	ea	490.00	73,500	
510								
511			<b>Sub Total : Institutional Equipment</b>				<b>697,500</b>	
512								
513	E1030		Vehicular Equipment					
514			Not included				-	
515								
516			<b>Sub Total : Vehicular Equipment</b>				-	
517								
518	E1090		Other Equipment					
519			Vocational Shops, equipment/furnishings not covered by Owner FF&E	256,350	gsf	2.11	540,000	
520			Stage equipment	256,350	gsf	1.17	300,000	
521								
522			<b>Sub Total : Other Equipment</b>				<b>840,000</b>	
523								
524								
525	E20		<b>Furnishings</b>					
526	E2010		<b>Fixed Furnishings</b>					
527			Casework-teaching spaces, interiors package, Div 064000	256,350	gsf	3.00	769,050	
528			Science/Lab casework	256,350	gsf	7.00	1,794,450	
529			Shops lockers	256,350	gsf	0.62	160,000	
530			Student lockers	256,350	gsf	0.47	120,000	
531			Athletics lockers	256,350	gsf	0.31	80,000	
532								
533			<b>Sub Total : Fixed Furnishings</b>				<b>2,923,500</b>	
534	E2020		<b>Moveable Furnishings</b>					
535			By Owner					
536								
537			<b>Sub Total : Moveable Furnishings</b>				-	
538								
539			<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				<b>End of Trade</b>	<b>\$ 7,011,325</b>
540								
541								
542	F		<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>					



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
543	<b>F10</b>	<b>Special Construction</b>					
544		Special Construction		-	-		
545		No work this section		-	-		
546							
547		<b>Sub Total : Special Construction</b>			-		
548							
549							
550	<b>F20</b>	<b>Selective Building Demolition</b>					
551	F2010	<b>Building Elements Demolition</b>					
552		Building Demolition					
553		Demolition of extg school structure, above grade		123,510	sf	13.00	1,605,630
554							
555		<b>Sub Total : Building Elements Demolition</b>					<b>1,605,630</b>
556							
557	F2020	<b>Hazardous Components Abatement</b>					
558		Hazardous Components Abatement					
559		Building - hazmat removals		123,510	gsf	14.17	1,750,000
560							
561		<b>Sub Total : Hazardous Components Abatement</b>					<b>1,750,000</b>
562							
563		<b>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</b>					<b>End of Trade \$ 3,355,630</b>
564							
565	<b>G</b>	<b>SITWORK</b>					
566	<b>G10</b>	<b>Site Preparation</b>					
567		Clear & grub site; remove grass, shrubs, vegetation, furnishing, etc. Including H&D		459,476	sf	0.15	68,921
568		Remove trees. Assumed qty		25	ea	450.00	11,250
569		Remove concrete/asphalt pavement at existing parking lots and drives; inc H&D		215,374	sf	4.00	861,496
570		Misc site demolition work for site improvements work, work limits		1	ls	141,300.00	141,300
571		Protection measures		1	ls	216,600.00	216,600
572		Raise level grade for site improvements work		37,100	cy	65.00	2,411,500
573							
574		<b>Sub Total : Site Preparation</b>					<b>3,711,067</b>
575							
576	<b>G20</b>	<b>Site Improvements</b>					
577		New asphalt pavement at parking lots and drives; incl subbase		254,817	sf	3.00	764,451
578		ADA parking spaces compliance. Assumed qty		4	ea	2,000.00	8,000
579		New curbing at parking lots, drives, and walks, granite		9,760	lf	47.00	458,720
580		Concrete pavement		20,105	sf	15.00	301,575
581		Athletic field improvement, walkways. Assumed qty		5,000	sf	15.00	75,000
582		Track, running surface, asphalt w/ rubber surface		25,687	sf	24.00	616,488
583		Baseball field (grass, soils, sand blanket drainage, root zone)		70,544	sf	2.00	141,088
584		Softball field (grass, soils, sand blanket drainage, root zone)		41,466	sf	2.00	82,932
585		Irrigation at grassed fields		112,010	sf	0.70	78,407



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Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
586	1	ls	90,000.00	90,000			
587	1	ls	71,000.00	71,000			
588	900	lf	300.00	270,000			
589	400	lf	300.00	120,000			
590	250	lf	300.00	75,000			
591	1	ls	70,000.00	70,000			
592	1	ls	70,000.00	70,000			
593	250	seat	150.00	37,500			
594	2	pr	12,000.00	24,000			
595	1	ls	60,000.00	60,000			
596	1	ls	900,000.00	900,000			
597	1	ls	150,000.00	150,000			
598	81,894	sf	12.00	982,728			
599	326,585	sf	4.00	1,306,340			
600	1,280	sf	300.00	384,000			
601	12,800	sf	15.00	192,000			
602	750	sf	5.00	3,750			
603	1,500	sf	10.00	15,000			
604	50	ea	1,500.00	75,000			
605	1	ls	60,000.00	60,000			
606	200	lf	900.00	180,000			
607	1	ls	766,300.00	766,300			
608	1	below	-	-			
609	1,800	sf	340.00	612,000			
610	1,800	sf	300.00	540,000			
611	900	sf	280.00	252,000			
612							
613							
614							
615	<b>G30</b>	<b>Site Mechanical Utilities</b>					
616		<b>Site, Storm</b>					
617	1	ls	4,375,000.00	4,375,000			
618	1	ls	152,000.00	152,000			
619	1	ls	575,000.00	575,000			
620	1	ls	130,000.00	130,000			
621							
622		<b>Site, Gas</b>					
623	1	ls	95,000.00	95,000			
624							
625		<b>Site, Water</b>					
626	1,800	lf	120.00	216,000			
627	1,500	lf	140.00	210,000			
628	1	ls	455,000.00	455,000			
629							
		<b>Sub Total : Site Improvements</b>		<b>9,833,279</b>			







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Option NC-2.0 900

ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			256,350	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
676	2" RGS	3,000.00	lf	59.51	178,530		
677	# 3/0 wire	9,000.00	lf	11.49	103,410		
678	# 4 wire	3,000.00	lf	4.57	13,710		
679	Miscellaneous 120V and 208V connections	1	ls	35,000.00	35,000		
680							
681	<b>Sub Total : Site Electrical Utilities</b>				<b>2,272,255</b>		
682							
683	<b>G90 Other Site Construction</b>						
684	No work this section						
685							
686	<b>Sub Total : Other Site Construction</b>				-		
687							
688	<b>SUBTOTAL FOR SITEWORK</b>				<b>End of Trade</b>	<b>\$ 26,252,301</b>	



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Option NC-2.1 805

ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
1	<b>A</b>	<b>SUBSTRUCTURE</b>					
2	<b>A10</b>	<b>FOUNDATIONS</b>					
3	A1010	Standard Foundations					
4		Foundations/footings, perimeter walls	2,096	lf	-		
5		Formwork	25,152	sf	18.00	452,736	
6		Concrete materials	476	cy	168.00	79,968	
7		Reinforcing for foundations/footings, perimeter walls	30	tn	4,100.00	123,000	
8		Labor for foundations/footings, perimeter walls	476	cy	140.00	66,640	
9		Spread Footings, sizing TBD	340	ea	-		
10		Formwork	340	ea	1,900.00	646,000	
11		Concrete materials	2,962	cy	168.00	497,616	
12		Reinforcing for spread footings	170	tn	4,100.00	697,000	
13		Labor for foundations/footings, spread footings	2,962	cy	140.00	414,680	
14		Strip Interior Footings, sizing TBD	400	lf	-		
15		Formwork	1,600	sf	18.00	28,800	
16		Concrete materials	63	cy	168.00	10,584	
17		Reinforcing for spread footings	10	tn	4,100.00	41,000	
18		Labor for foundations/footings, spread footings	63	cy	140.00	8,820	
19		Other Work			-		
20		Elevator pit	2	ea	45,000.00	90,000	
21		Damproofing to exterior frost wall	12,580	sf	6.00	75,480	
22		Insulation to exterior frost wall	12,580	sf	4.80	60,384	
23		Perimeter foundation wall drainage	2,096	lf	13.00	27,248	
24		Misc concrete work for building layouts	530	cy	900.00	477,000	
25		Div 03 Formwork, trade requirements and coordination	1,700	hr	180.00	306,000	
26		Excavation/Backfill efforts for foundations/footings			-		
27		Over excavation and soil improvements for SOG	33,200	cy	80.00	2,656,000	
28		Raise level grade of SOG, 08', import	44,200	cy	65.00	2,873,000	
29		Excavation/backfill efforts for elev pit	2	ea	4,800.00	9,600	
30		Excavation/backfill efforts for below slab UG plumbing/MEPs	11,050	cy	65.00	718,250	
31							
32		Sub Total : Standard Foundations				<b>10,359,806</b>	
33							
34	A1020	Special Foundations					
35		No work					
36							
37		Sub Total : Special Foundations				-	
38							
39	A1030	Slab On Grade					
40		Slab on grade, complete	148,997	sf	-		
41		Gravel base/prep for SOG	5,795	cy	37.00	214,415	
42		Concrete materials	2,415	cy	168.00	405,720	
43		Reinforcing	148,997	sf	2.00	297,994	
44		Pour/finish	148,997	sf	9.00	1,340,973	13.72300785
45		Vapor barrier	148,997	sf	3.00	446,991	



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION				BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description				Quantity	Unit	Unit Price	Total \$	Subtotal Trades
46			Other Work				-	
47			Underslab drainage, SOG	148,997	sf	1.20	178,796	
48			Misc concrete work for building layouts	200	cy	900.00	180,000	
49			Div 03 Flatwork, trade requirements and coordination	900	hr	180.00	162,000	
50			Excavation/Backfill efforts for foundations/footings					
51			Excavation/backfill efforts for SOG work	5,600	cy	39.00	218,400	
52								
53			Sub Total : Slab On Grade				3,445,289	
54								
55	<b>A20</b>		<b>BASEMENT CONSTRUCTION</b>					
56		A2010	Basement Excavation					
57			No work this section					
58								
59			Sub Total : Basement Excavation				-	
60								
61		A2020	Basement Walls					
62			No work this section					
63								
64			Sub Total : Basement Walls				-	
65								
66			<b>SUBTOTAL FOR SUBSTRUCTURE</b>				End of Trade	\$ 13,805,095
67								
68	<b>B</b>		<b>SHELL</b>					
69	<b>B10</b>		<b>SUPERSTRUCTURE</b>					
70		B1010	Floor Construction					
71			Steel for framing	1,690	tn	5,100.00	8,619,000	
72			Steel for exterior enclosures	100	tn	5,100.00	510,000	
73			Steel for interior construction (spans/openings/supports)	50	tn	5,100.00	255,000	
74			Steel, other for building requirements	85	tn	5,100.00	433,500	
75			Metal decking for floors	91,363	sf	4.40	401,997	
76			Slab on decks	91,363	sf	8.00	730,904	
77			Other Work				-	
78			Div 05 Structural Steel, trade requirements and coordination	2,700	hr	190.00	513,000	
79			Fireproofing for floors	91,363	sf	2.80	255,816	
80			Firestopping, floor penetrations	14	dy	3,780.00	52,920	
81								
82			Sub Total : Floor Construction				11,772,138	
83								
84		B1020	Roof Construction					
85			Steel for roof framing	1,060	tn	5,100.00	5,406,000	
86			Steel, other for building requirements	110	tn	5,100.00	561,000	
87			Metal decking for roof	150,061	sf	4.40	660,268	
88			Other Work				-	
89			Div 05 Structural Steel, trade requirements and coordination	1,800	hr	190.00	342,000	
90			Fireproofing for roof decking	150,061	sf	2.80	420,171	





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
91	9	dy	3,780.00	34,020			
92							
93							
94							
95							
96	<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
97	B2010	Exterior Walls					
98		Exterior wall surface area, TBD based on bldg layouts	68,300	sf			
99		Exterior wall, stud framing	68,300	sf	19.00	1,297,700	
100		Exterior wall, insulation	68,300	sf	13.00	887,900	
101		Exterior wall, AVB	68,300	sf	9.00	614,700	
102		Exterior wall, sheathing	68,300	sf	9.00	614,700	
103		Exterior wall, GWB finish	68,300	sf	5.00	341,500	
104		Exterior wall, soffits/returns	17,075	sf	19.00	324,425	
105		Exterior wall, misc metals/supports	69	tn	4,200.00	289,800	
106		Exterior wall, louvers/vents	170	sf	190.00	32,300	
107		Exterior wall surface area, cladding system, mixed materials	68,300	sf	110.00	7,513,000	
108		Exterior wall surface area, cladding system, soffits/returns/corners/wraps	12,300	sf	120.00	1,476,000	
109		Exterior wall, sealants/caulking of dissimilar materials	68,300	sf	3.60	245,880	
110		Exterior wall, bldg signage "South Shore Regional Vocational High School"	1	ea	18,620.00	18,620	
111							
112		Sub Total : Exterior Walls				<b>13,656,525</b>	
113							
114	B2020	Exterior windows					
115		Exterior window surface area, TBD based on bldg layouts	25,600	sf			
116		Exterior windows, blocking/framing	25,600	sf	5.00	128,000	
117		Exterior glazing system	25,600	sf	200.00	5,120,000	
118		Exterior windows, sealants/caulking of dissimilar materials	25,600	sf	11.30	289,280	
119							
120		Sub Total : Exterior windows				<b>5,537,280</b>	
121							
122	B2030	Exterior doors					
123		Exterior doors including frames and hardware					
124		Vestibule, exterior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
125		Vestibule, interior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880	
126		Egress, exterior, (1) 3070 openings	5	ea	3,900.00	19,500	
127		Egress, exterior, (1) 6070 openings	8	ea	4,800.00	38,400	
128		Service Doors, exterior	2	ea	21,000.00	42,000	
129		Shops Doors, exterior	10	ea	25,200.00	252,000	
130		Exterior doors, sealants/caulking of dissimilar materials	5	dy	3,740.00	18,700	
131							
132		Sub Total : Exterior doors				<b>448,360</b>	
133							
134							
135	<b>B30</b>	<b>ROOFING</b>					
136	B3010	Roof Coverings					



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
137	Roof surface area, TBD based on bldg layouts	150,100	sf				
138	Insulation system	150,100	sf	11.00	1,651,100		
139	Roof blocking requirements	150,100	sf	2.00	300,200		
140	Membrane cover	150,100	sf	19.00	2,851,900		
141	Parapets/edge covers	150,100	sf	1.00	150,100		
142	Flashings/counterflashing	150,100	sf	1.70	255,170		
143	Special roof conditions work	150,100	sf	1.70	255,170		
144	MEP penetrations/flashings	150,100	sf	0.30	45,030		
145	Green roofs	30,020	sf	32.00	960,640		
146	Walkway pads	3,900	sf	30.00	117,000		
147	Roof hatch w/ guardrail	3	ea	7,900.00	23,700		
148	Guardrail, fall protection	1	ls	75,000.00	75,000		
149							
150	Sub Total : Roof Coverings				6,685,010		
151							
152	<b>SUBTOTAL FOR SHELL</b>				End of Trade	\$ 45,522,772	
153							
154							
155	<b>C</b>	<b>INTERIORS</b>					
156	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
157	C1010	Partitions, Rough Carpentry					
158		New partitions, GWB	210,400	sf	24.00	5,049,600	
159		New partitions, CMU	34,400	sf	35.00	1,204,000	
160		New partitions, glazing w/ frames	3,500	sf	115.00	402,500	
161		New partitions, misc metal for walls	58	tn	4,200.00	243,600	
162		New partitions, HM framed vision panels/openings	140	ea	1,600.00	224,000	
163		New partitions, blocking/framing	248,300	sf	1.00	248,300	
164		New partitions, firestopping	248,300	sf	0.70	173,810	
165		Glazing, interior for HM frames	4,480	sf	55.00	246,400	
166		Interior partitions, sealants/caulking of dissimilar materials	248,300	sf	0.65	161,395	
167							
168		Sub Total : Partitions, Rough Carpentry				7,953,605	
169							
170							
171	C1020	Interior Doors					
172		Frames, HM 3070	270	ea	290.00	78,300	
173		Frames, HM 6070	20	ea	480.00	9,600	
174		Frames, ALUM, 3080	31	ea	1,800.00	55,800	
175		Frames, ALUM, 6080	16	ea	2,400.00	38,400	
176		Doors, WD, 3070	270	ea	880.00	237,600	
177		Doors, WD, 6070	18	ea	1,760.00	31,680	
178		Doors, MTL, 6070	2	ea	480.00	960	
179		Doors, ALUM, 3080	31	ea	6,960.00	215,760	
180		Doors, ALUM, 6080	16	ea	13,920.00	222,720	
181		Hardware Set 01	270	ea	1,300.00	351,000	
182		Hardware Set 02	18	ea	1,800.00	32,400	
183		Hardware Set 03	2	ea	1,800.00	3,600	



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Option NC-2.1 805

ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
184	13	ea	900.00	11,700			
185	2,430	sf	55.00	133,650			
186	240,360	gsf	0.40	96,144			
187							
188	Sub Total : Interior Doors			<b>1,519,314</b>		6.32	
189							
190							
191	C1030	Specialties/Fittings					
192		240,360	gsf	3.00	721,080		
193		240,360	gsf	0.50	120,180		
194		240,360	gsf	0.75	180,270		
195		240,360	gsf	0.45	108,162		
196		240,360	gsf	1.20	288,432		
197		240,360	gsf	0.40	96,144		
198		240,360	gsf	0.90	216,324		
199		240,360	gsf	0.03	7,211		
200		240,360	gsf	0.45	108,162		
201		240,360	gsf	0.70	168,252		
202		240,360	gsf	0.05	12,018		
203		240,360	gsf	0.02	4,000		
204		240,360	gsf	0.58	140,000		
205		240,360	gsf	0.09	21,632		
206		240,360	gsf	1.15	276,414		
207							
208	Sub Total : Specialties/Fittings			<b>2,468,281</b>			
209							
210	C20	STAIRCASES					
211	C2010	Stair Construction					
212		2	ft	39,000.00	78,000		
213		2	ft	39,000.00	78,000		
214		2	ft	60,000.00	120,000		
215		3	ft	39,000.00	117,000		
216		3	ft	60,000.00	180,000		
217		3	ft	39,000.00	117,000		
218							
219	Sub Total : Stair Construction			<b>690,000</b>			
220							
221	C2020	Stair Finishes					
222		10	ft	6,800.00	68,000		
223		5	ft	11,000.00	55,000		
224							
225	Sub Total : Stair Finishes			<b>123,000</b>			
226							
227	C30	INTERIOR FINISHES					
228	C3010	Wall Finishes					



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
229	841,300	sf	0.95	799,235			
230	42,065	sf	30.00	1,261,950			
231	12,620	sf	31.00	391,205			
232							
233							
234							
235							
236	228,400	sf	12.00	2,740,800			
237	148,997	sf	3.00	446,991			
238							
239							
240							
241							
242							
243	228,400	sf	14.00	3,197,600			
244	57,100	sf	14.00	799,400			
245							
246							
247							
248							
249							
250							
251							
252							
253	1	ea	270,000.00	270,000			
254	1	ea	425,000.00	425,000			
255							
256							
257							
258							
259	240,360	gsf	1.50	360,540			
260							
261							
262							
263							
264							
265							
266							
267							
268							
269	240,360	gsf	20.80	4,999,488			
270							
271							
272							
273							





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
274						included	
275						included	
276						included	
277						included	
278						included	
279							
280							
281							
282							
283							
284							
285							
286							
287							
288							
289							
290							
291							
292							
293							
294							
295							
296							
297	D30	HVAC					
298		Equipment (Option-1 - AHU with Displacement)	240,360	gsf	30.00	7,210,800	
299		Roof top mounted air handling units				included	
300		Energy Recovery Ventilators (ERVs)				included	
301		Exhaust fans				included	
302		Air to water source heat pump modular chiller				included	
303		Chilled water pumps with VFD				included	
304		Buffer tank				included	
305		Gas fired condensing boilers				included	
306		Heating hot water pumps with VFD				included	
307		Glycol make up units				included	
308		Expansion tanks				included	
309		Air separators				included	
310		Ductless split A/C units				included	
311		Condensate pumps				included	
312		Hot water cabinet unit heaters / Hot water unit heaters				included	
313		Electric cabinet unit heaters / Electric unit heaters				included	
314		Hot water radiant ceiling panels				included	
315		Heat exchanger - <i>assume</i>				included	
316		Central vehicle exhaust system				included	
317		Dust collectors				included	
318							
		<b>Sub Total : Plumbing</b>				<b>7,018,512</b>	



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
319	Fuel oil system - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.	1	ls	110,000.00	110,000		
320							
321	Piping system	240,360	gsf	16.00	3,845,760		
322	Chilled water pipe with insulation				included		
323	Heating hot water pipe with insulation				included		
324	Refrigerant pipe with insulation				included		
325	Condensate drain pipe with insulation				included		
326	Valves and specialties (incl. hook-up equipment)				included		
327							
328	Air side system	240,360	gsf	22.00	5,287,920		
329	Galvanized steel duct				included		
330	Black iron 12 ga duct @ Kitchen exhaust hood				included		
331	Duct insulation / Acoustical lining				included		
332	Duct insulation @ Kitchen exhaust				included		
333	Air devices (incl. displacement ventilation diffusers)				included		
334	Dampers				included		
335	Kitchen hood with fire suppression - duct connection only				included		
336	Lab fume hoods - duct connection only				included		
337	VAV boxes with sound trap				included		
338	Boiler flue with insulation				included		
339	Boiler combustion air intake				included		
340	Flues up thru roof for HVAC and Plumbing Shops				included		
341	Clean out doors				included		
342	Flexible connections @ Equipment				included		
343							
344	System controls	240,360	gsf	10.00	2,403,600		
345							
346	Other	240,360	gsf	2.40	576,864		
347	Access doors				included		
348	Vibration isolation / Seismic				included		
349	Temporary HVAC				included		
350	Penetrations and sleeves				included		
351	Core drill, patching, fire stopping				included		
352	Test and balance				included		
353	Clean, flush and test (piping system)				included		
354	System start-up / Commissioning				included		
355	Rigging				included		
356	Equipment handling and material distribution				included		
357	System ID / Valve tags				included		
358	Shop co-ordination drawings				included		
359	O&M manuals				included		
360	Equipment, duct and pipe supports				included		
361	Coordination with other trades				included		
362							



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION				BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description				Quantity	Unit	Unit Price	Total \$	Subtotal Trades
363			<b>Sub Total : HVAC</b>				<b>19,434,944</b>	
364								
365	<b>D40</b>		<b>Fire Protection</b>					
366			<b>21000 Fire Protection</b>					
367			Equipment					
368			Fire pump with controller				not Req'd	
369			Jockey pump with controller				not Req'd	
370								
371			Wet sprinkler system	240,360	gsf	7.50	1,802,700	
372			Wet sprinkler system pipe	1	ls		included	
373			Sprinkler heads	1	ls		included	
374			Alarm check valve assembly	1	ea		included	
375			2-1/2" Fire hose valve in cabinet	1	ls		included	
376			Floor control valves assembly with tamper switch	1	ls		included	
377			Other valves and specialties	1	ls		included	
378			Roof hydrant / Roof manifold	1	ea		included	
379			Siamese connections	1	ls		included	
380			Locked storage fire department cabinet	1	ea		included	
381								
382			Other	240,360	gsf	0.50	120,180	
383			System ID, labels and color coding	1	ls		included	
384			Shop co-ordination drawings	1	ls		included	
385			Painting main sprinkler pipe	1	ls		included	
386			Design calculations	1	ls		included	
387			Core drill, patching, fire stopping	1	ls		included	
388			Clean, flush and test	1	ls		included	
389			Commissioning	1	ls		included	
390			Material distribution	1	ls		included	
391			Supports	1	ls		included	
392			Coordination with other trades	1	ls		included	
393								
394			<b>Sub Total : Fire Protection</b>				<b>1,922,880</b>	
395								
396	<b>D50</b>		<b>Electrical</b>					
397			Demolition	240,360	gsf	0.30	72,108	
398								
399			Power Distribution				-	
400			Normal power	240,360	gsf	3.15	757,134	
401			3000 Amp main switchboard	1	ea		included	
402			1600 Amp distribution board	1	ea		included	
403			1200 Amp distribution board	1	ea		included	
404			800 Amp panel, 208V, 2-section	1	ea		included	
405			600 Amp panel, 480V	1	ea		included	
406			600 Amp panel, 208V	1	ea		included	
407			400 Amp panel, 480V	3	ea		included	



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
408	400 Amp panel, 208V	1	ea			included	
409	400 Amp panel, 208V, 2-section	5	ea			included	
410	225 Amp panel, 480V	1	ea			included	
411	225 Amp panel, 208V, 2-section	7	ea			included	
412	225 Amp panel, 208V	1	ea			included	
413	100 Amp panel, 480V	6	ea			included	
414	100 Amp panel, 208V	9	ea			included	
415	60 Amp panel, 480V	1	ea			included	
416	500 KVA transformer	1	ea			included	
417	300 KVA transformer	1	ea			included	
418	150 KVA transformer	1	ea			included	
419	112.5 KVA transformer	1	ea			included	
420	CT cabinet	1	ea			included	
421	Utility meter	1	ea			by National Grid	
422	Panel mounting assembly	37	ea			included	
423	Transformer support	4	ea			included	
424	Housekeeping concrete pad	3	ea			included	
425							
426	Power Distribution - Emergency Power	240,360	sf	2.25	540,810		
427	400 KW diesel generator	1	ea			included	
428	Sound attenuated enclosure, WP	1	ea			included	
429	72-hr sub-base fuel tank	1	ea			included	
430	Circuit breakers	1	ls			included	
431	Battery charger and block heater	1	ls			included	
432	Remote annunciator	1	ea			included	
433	Unload, unpack, set in place generator and accessories	1	ls			included	
434	600 Amp ATS	1	ea			included	
435	100 Amp ATS	1	ea			included	
436	ATS mounting assembly	2	ea			included	
437							
438	Feeders - Normal and Emergency Power	240,360	sf	3.25	781,170		
439							
440	PV System (future)						
441	3" conduit (empty)	1	ls	15,000.00	15,000		
442							
443	Lighting (interior upgrades)	240,360	gsf	9.00	2,163,240		
444	Lighting (exterior upgrades)	1	ls	40,000.00	40,000		
445							
446	Lighting Control	240,360	gsf	2.55	612,918		
447							
448	Branch Circuitry	240,360	sf	3.00	721,080		
449	Power to equipment and devices (F & I B.O.)					w/above	
450	Food service equipment					w/above	
451	Plumbing electronic faucets/valves					w/above	
452	Hand dryers					w/above	





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
453				w/above			
454							
455	240,360	sf	4.50	1,081,620			
456							
457	240,360	gsf	7.00	1,682,520			
458				w/above			
459							
460	1	ls	25,000.00	25,000			
461							
462	240,360	gsf	0.30	72,108			
463							
464	240,360	gsf	0.30	72,108			
465							
466	240,360	gsf	6.50	1,562,340			
467							
468	240,360	gsf	2.75	660,990			
469				w/above			
470				w/above			
471							
472	240,360	gsf	2.50	600,900			
473				w/above			
474				w/above			
475							
476	240,360	gsf	1.75	420,630			
477							
478	1	ls	100,000.00	100,000			
479							
480	240,360	gsf	2.00	480,720			
481				included			
482				included			
483				included			
484				included			
485				included			
486							
487				<b>12,462,396</b>			
488							
489				<b>End of Trade</b>	<b>\$ 41,533,732</b>		
490							
491							
492	<b>E</b>						
493	<b>E10</b>						
494	E1010						
495							
496							
497							



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
498			Teaching, screens/projections	240,360	gsf	2.00	480,720
499			Athletic equipment	240,360	gsf	0.42	100,000
500							
501			<b>Sub Total : Commercial Equipment</b>				<b>2,398,420</b>
502							
503	E1020		Institutional Equipment				-
504			Bleachers	1	ls	225,000.00	225,000
505			Basketball hoops	6	ea	14,000.00	84,000
506			Auditorium seating, retractable	300	ea	900.00	270,000
507			Auditorium seating, fixed	100	ea	490.00	49,000
508							
509			<b>Sub Total : Institutional Equipment</b>				<b>628,000</b>
510							
511	E1030		Vehicular Equipment				
512			Not included				-
513							
514			<b>Sub Total : Vehicular Equipment</b>				-
515							
516	E1090		Other Equipment				
517			Vocational Shops, equipment/furnishings not covered by Owner FF&E	240,360	gsf	2.25	540,000
518			Stage equipment	240,360	gsf	1.25	300,000
519							
520			<b>Sub Total : Other Equipment</b>				<b>840,000</b>
521							
522							
523	E20		<b>Furnishings</b>				
524	E2010		<b>Fixed Furnishings</b>				
525			Casework-teaching spaces, interiors package, Div 064000	240,360	gsf	3.00	721,080
526			Science/Lab casework	240,360	gsf	7.00	1,682,520
527			Shops lockers	240,360	gsf	0.67	160,000
528			Student lockers	240,360	gsf	0.50	120,000
529			Athletics lockers	240,360	gsf	0.33	80,000
530							
531			<b>Sub Total : Fixed Furnishings</b>				<b>2,763,600</b>
532	E2020		<b>Moveable Furnishings</b>				
533			By Owner				
534							
535			<b>Sub Total : Moveable Furnishings</b>				-
536							
537			<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				<b>End of Trade \$ 6,630,020</b>
538							
539							
540	F		<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				
541	F10		<b>Special Construction</b>				
542			Special Construction				



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
543			No work this section			-	
544							
545			<b>Sub Total : Special Construction</b>			-	
546							
547							
548	<b>F20</b>		<b>Selective Building Demolition</b>				
549	F2010		<b>Building Elements Demolition</b>				
550			Building Demolition				
551			Demolition of extg school structure, above grade	123,510	sf	13.00	1,605,630
552							
553			<b>Sub Total : Building Elements Demolition</b>				<b>1,605,630</b>
554							
555	F2020		<b>Hazardous Components Abatement</b>				
556			Hazardous Components Abatement				
557			Building - hazmat removals	123,510	gsf	14.17	1,750,000
558							
559			<b>Sub Total : Hazardous Components Abatement</b>				<b>1,750,000</b>
560							
561			<b>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</b>				<b>End of Trade \$ 3,355,630</b>
562							
563	<b>G</b>		<b>SITWORK</b>				
564	G10		<b>Site Preparation</b>				
565			Clear & grub site; remove grass, shrubs, vegetation, furnishing, etc. Including H&D	459,476	sf	0.15	68,921
566			Remove trees. Assumed qty	25	ea	450.00	11,250
567			Remove concrete/asphalt pavement at existing parking lots and drives; inc H&D	215,374	sf	4.00	861,496
568			Misc site demolition work for site improvements work, work limits	1	ls	141,300.00	141,300
569			Protection measures	1	ls	216,600.00	216,600
570			Raise level grade for site improvements work	37,100	cy	65.00	2,411,500
571							
572			<b>Sub Total : Site Preparation</b>				<b>3,711,067</b>
573							
574	<b>G20</b>		<b>Site Improvements</b>				
575			New asphalt pavement at parking lots and drives; incl subbase	254,817	sf	3.00	764,451
576			ADA parking spaces compliance. Assumed qty	4	ea	2,000.00	8,000
577			New curbing at parking lots, drives, and walks, granite	9,760	lf	47.00	458,720
578			Concrete pavement	20,105	sf	15.00	301,575
579			Athletic field improvement, walkways. Assumed qty	5,000	sf	15.00	75,000
580			Track, running surface, asphalt w/ rubber surface	25,687	sf	24.00	616,488
581			Baseball field (grass, soils, sand blanket drainage, root zone)	70,544	sf	2.00	141,088
582			Softball field (grass, soils, sand blanket drainage, root zone)	41,466	sf	2.00	82,932
583			Irrigation at grassed fields	112,010	sf	0.70	78,407
584			Baseball, backstop and fencing	1	ls	90,000.00	90,000
585			Softball, backstop and fencing	1	ls	71,000.00	71,000



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION	
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades			
586			Railings/guardrails at ramps and stairs. Assumed qty	900	lf	300.00	270,000	
587			Baseball field, railings. Assumed qty	400	lf	300.00	120,000	
588			Softball field, railings. Assumed qty	250	lf	300.00	75,000	
589			Bleachers, baseball	1	ls	70,000.00	70,000	
590			Bleachers, softball	1	ls	70,000.00	70,000	
591			Bleachers, track	250	seat	150.00	37,500	
592			Security gates. 26' each	2	pr	12,000.00	24,000	
593			Press box, 8'x24' @ track	1	ls	60,000.00	60,000	
594			Lighting, fields, (4) high masts, track/sports field	1	ls	900,000.00	900,000	
595			Lighting, walks, low/bollard	1	ls	150,000.00	150,000	
596			Synthetic turf @ Multipurpose field	81,894	sf	12.00	982,728	
597			Landscape restoration/plantings improvements (grass, mulch, plantings)	326,585	sf	4.00	1,306,340	
598			Boardwalk. 80'x16'	1,280	sf	300.00	384,000	
599			Walkway; between 99 spaces parking and driveway. Assume 16' W	12,800	sf	15.00	192,000	
600			Wetland fill	750	sf	5.00	3,750	
601			Wetland replication	1,500	sf	10.00	15,000	
602			New trees. Assumed qty	50	ea	1,500.00	75,000	
603			Wetlands protections	1	ls	60,000.00	60,000	
604			Retaining wall construction, precast concrete block w/ back drainage	200	lf	900.00	180,000	
605			Misc site improvements	1	ls	766,300.00	766,300	
606			Site Structures, Above grade	1	below	-	-	
607			Greenhouse, prefab	1,800	sf	340.00	612,000	
608			Maintenance Garage, foundation, slab and utility stubs only (structure by others)	1,800	sf	300.00	540,000	
609			Concession bldg, foundation, slab and utility stubs only (structure by others)	900	sf	280.00	252,000	
610								
611			<b>Sub Total : Site Improvements</b>				<b>9,833,279</b>	
612								
613	<b>G30</b>		<b>Site Mechanical Utilities</b>					
614			<b>Site, Storm</b>					
615			On-site UG storm water detention/management system	1	ls	4,375,000.00	4,375,000	
616			On-site, storm underground structures	1	ls	152,000.00	152,000	
617			On-site, storm underground piping	1	ls	575,000.00	575,000	
618			On-site, swales/vegetation reconstruction, stormwater management	1	ls	130,000.00	130,000	
619								
620			<b>Site, Gas</b>					
621			Gas service line	1	ls	95,000.00	95,000	
622							-	
623			<b>Site, Water</b>					
624			Site domestic water service	1,800	lf	120.00	216,000	
625			Site fire water service	1,500	lf	140.00	210,000	
626			Site fire water, hydrants and service piping	1	ls	455,000.00	455,000	
627							-	
628			<b>Site, Sewer</b>					
629			Wastewater treatment plant facility	1,200	sf	3,333.33	4,000,000	
630			Site sewer service	900	lf	120.00	108,000	





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
631	1	ls	57,600.00	57,600			
632	1	ls	62,100.00	62,100			
633							
634	<b>Sub Total : Site Mechanical Utilities</b>			<b>10,435,700</b>			
635							
636	<b>G40</b>	<b>Site Electrical Utilities</b>					
637		1	ls	200,000.00	200,000		
638		1	ea		by National Grid		
639					included		
640					included		
641					included		
642					included		
643					included		
644					included		
645							
646		1	ls	150,000.00	150,000	-	
647		1	ea		included		
648		1	ea		included		
649		50	ea		included		
650		1	ls		included	-	
651							
652		1	ls	270,000.00	270,000		
653					included		
654					included		
655					included		
656					included		
657					included		
658							
659						-	
660		1	ea	13,000.00	13,000		
661		1	ea	7,000.00	7,000		
662		1	ea	12,324.00	12,324		
663		5	ea	155.00	775		
664		1	ea	506.00	506		
665		1	ls	1,200,000.00	1,200,000		
666		4	ea		included		
667		8	ea		included		
668		3	ea		included		
669		1	ea		included		
670		12	ea		included		
671		12	ea		included		
672		12	ea	6,500.00	78,000		
673		1	ls	10,000.00	10,000		
674		3,000.00	lf	59.51	178,530		
675		9,000.00	lf	11.49	103,410		



**South Shore Regional Vocational Technical HS**  
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**ESTIMATE DETAIL**

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			240,360	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
676	# 4 wire	3,000.00	lf	4.57	13,710		
677	Miscellaneous 120V and 208V connections	1	ls	35,000.00	35,000		
678							
679	<b>Sub Total : Site Electrical Utilities</b>				<b>2,272,255</b>		
680							
681	<b>G90 Other Site Construction</b>						
682	No work this section						
683							
684	<b>Sub Total : Other Site Construction</b>				-		
685							
686	<b><u>SUBTOTAL FOR SITEWORK</u></b>				<b>End of Trade</b>	<b>\$ 26,252,301</b>	



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
1	<b>A</b>	<b>SUBSTRUCTURE</b>					
2	<b>A10</b>	<b>FOUNDATIONS</b>					
3	A1010	Standard Foundations					
4		Foundations/footings, perimeter walls	2,125	lf	-		
5		Formwork	25,500	sf	18.00	459,000	
6		Concrete materials	483	cy	168.00	81,144	
7		Reinforcing for foundations/footings, perimeter walls	30	tn	4,100.00	123,000	
8		Labor for foundations/footings, perimeter walls	483	cy	140.00	67,620	
9		Spread Footings, sizing TBD	320	ea	-	-	
10		Formwork	320	ea	1,900.00	608,000	
11		Concrete materials	2,788	cy	168.00	468,384	
12		Reinforcing for spread footings	160	tn	4,100.00	656,000	
13		Labor for foundations/footings, spread footings	2,788	cy	140.00	390,320	
14		Strip Interior Footings, sizing TBD	400	lf	-	-	
15		Formwork	1,600	sf	18.00	28,800	
16		Concrete materials	63	cy	168.00	10,584	
17		Reinforcing for spread footings	10	tn	4,100.00	41,000	
18		Labor for foundations/footings, spread footings	63	cy	140.00	8,820	
19		Other Work			-	-	
20		Elevator pit	2	ea	45,000.00	90,000	
21		Damproofing to exterior frost wall	12,750	sf	6.00	76,500	
22		Insulation to exterior frost wall	12,750	sf	4.80	61,200	
23		Perimeter foundation wall drainage	2,125	lf	13.00	27,625	
24		Misc concrete work for building layouts	510	cy	900.00	459,000	
25		Div 03 Formwork, trade requirements and coordination	1,700	hr	180.00	306,000	
26		Excavation/Backfill efforts for foundations/footings			-	-	
27		Over excavation and soil improvements for SOG	31,200	cy	80.00	2,496,000	
28		Raise level grade of SOG, 08', import	41,600	cy	65.00	2,704,000	
29		Excavation/backfill efforts for foundations/footings	8,700	cy	39.00	339,300	
30		Excavation/backfill efforts for interior footings	2,200	cy	39.00	85,800	
31		Excavation/backfill efforts for elev pit	2	ea	4,800.00	9,600	
32		Excavation/backfill efforts for below slab UG plumbing/MEPs	550	cy	39.00	21,450	
33							
34		Sub Total : Standard Foundations				<b>9,619,147</b>	
35							
36	A1020	Special Foundations					
37		No work					
38							
39		Sub Total : Special Foundations				-	
40							
41	A1030	Slab On Grade					
42		Slab on grade, complete	140,212	sf	-	-	
43		Gravel base/prep for SOG	5,453	cy	37.00	201,761	
44		Concrete materials	2,272	cy	168.00	381,696	
45		Reinforcing	140,212	sf	2.00	280,424	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
46	Pour/finish	140,212	sf	9.00	1,261,908		13.72227769
47	Vapor barrier	140,212	sf	3.00	420,636		
48	Other Work				-		
49	Underslab drainage, SOG	140,212	sf	1.20	168,254		
50	Misc concrete work for building layouts	200	cy	900.00	180,000		
51	Div 03 Flatwork, trade requirements and coordination	900	hr	180.00	162,000		
52	Excavation/Backfill efforts for foundations/footings						
53	Excavation/backfill efforts for SOG work	5,200	cy	39.00	202,800		
54							
55	Sub Total : Slab On Grade				3,259,479		
56							
57	<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
58	A2010	Basement Excavation					
59		No work this section					
60							
61		Sub Total : Basement Excavation				-	
62							
63	A2020	Basement Walls					
64		No work this section					
65							
66		Sub Total : Basement Walls				-	
67							
68		<b>SUBTOTAL FOR SUBSTRUCTURE</b>				<b>End of Trade</b>	<b>\$ 12,878,626</b>
69							
70	<b>B</b>	<b>SHELL</b>					
71	<b>B10</b>	<b>SUPERSTRUCTURE</b>					
72	B1010	Floor Construction					
73		Steel for framing	1,820	tn	5,100.00	9,282,000	
74		Steel for exterior enclosures	110	tn	5,100.00	561,000	
75		Steel for interior construction (spans/openings/supports)	60	tn	5,100.00	306,000	
76		Steel, other for building requirements	91	tn	5,100.00	464,100	
77		Metal decking for floors	119,308	sf	4.40	524,955	
78		Slab on decks	119,308	sf	8.00	954,464	
79		Other Work				-	
80		Div 05 Structural Steel, trade requirements and coordination	3,000	hr	190.00	570,000	
81		Fireproofing for floors	119,308	sf	2.80	334,062	
82		Firestopping, floor penetrations	15	dy	3,780.00	56,700	
83							
84		Sub Total : Floor Construction				13,053,282	
85							
86	B1020	Roof Construction					
87		Steel for roof framing	1,040	tn	5,100.00	5,304,000	
88		Steel, other for building requirements	110	tn	5,100.00	561,000	
89		Metal decking for roof	147,294	sf	4.40	648,094	
90		Other Work				-	





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
91	Div 05 Structural Steel, trade requirements and coordination	1,800	hr	190.00	342,000		
92	Fireproofing for roof decking	147,294	sf	2.80	412,423		
93	Firestopping, floor penetrations	9	dy	3,780.00	34,020		
94							
95	Sub Total : Roof Construction				<b>7,301,537</b>		
96							
97							
98	<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
99	B2010	Exterior Walls					
100	Exterior wall surface area, TBD based on bldg layouts	68,900	sf				
101	Exterior wall, stud framing	68,900	sf	19.00	1,309,100		
102	Exterior wall, insulation	68,900	sf	13.00	895,700		
103	Exterior wall, AVB	68,900	sf	9.00	620,100		
104	Exterior wall, sheathing	68,900	sf	9.00	620,100		
105	Exterior wall, GWB finish	68,900	sf	5.00	344,500		
106	Exterior wall, soffits/returns	17,225	sf	19.00	327,275		
107	Exterior wall, misc metals/supports	75	tn	4,200.00	315,000		
108	Exterior wall, louvers/vents	170	sf	190.00	32,300		
109	Exterior wall surface area, cladding system, mixed materials	68,900	sf	110.00	7,579,000		
110	Exterior wall surface area, cladding system, soffits/returns/corners/wraps	12,500	sf	120.00	1,500,000		
111	Exterior wall, sealants/caulking of dissimilar materials	68,900	sf	3.80	261,820		
112	Exterior wall, bldg signage "South Shore Regional Vocational High School"	1	ea	18,620.00	18,620		
113							
114	Sub Total : Exterior Walls				<b>13,823,515</b>		
115							
116	B2020	Exterior windows					
117	Exterior window surface area, TBD based on bldg layouts	25,600	sf				
118	Exterior windows, blocking/framing	25,600	sf	5.00	128,000		
119	Exterior glazing system	25,600	sf	200.00	5,120,000		
120	Exterior windows, sealants/caulking of dissimilar materials	25,600	sf	12.20	312,320		
121							
122	Sub Total : Exterior windows				<b>5,560,320</b>		
123							
124	B2030	Exterior doors					
125	Exterior doors including frames and hardware						
126	Vestibule, exterior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880		
127	Vestibule, interior, (2) 6090 openings w/ sidelight framing/glazing	1	ea	38,880.00	38,880		
128	Egress, exterior, (1) 3070 openings	5	ea	3,900.00	19,500		
129	Egress, exterior, (1) 6070 openings	8	ea	4,800.00	38,400		
130	Service Doors, exterior	2	ea	21,000.00	42,000		
131	Shops Doors, exterior	10	ea	25,200.00	252,000		
132	Exterior doors, sealants/caulking of dissimilar materials	6	dy	3,740.00	22,440		
133							
134	Sub Total : Exterior doors				<b>452,100</b>		
135							
136							



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
137	<b>B30</b>	<b>ROOFING</b>					
138	B3010	Roof Coverings					
139		Roof surface area, TBD based on bldg layouts	147,300	sf			
140		Insulation system	147,300	sf	11.00	1,620,300	
141		Roof blocking requirements	147,300	sf	2.00	294,600	
142		Membrane cover	147,300	sf	19.00	2,798,700	
143		Parapets/edge covers	147,300	sf	1.00	147,300	
144		Flashings/counterflashing	147,300	sf	1.70	250,410	
145		Special roof conditions work	147,300	sf	1.70	250,410	
146		MEP penetrations/flashings	147,300	sf	0.30	44,190	
147		Green roofs	29,460	sf	32.00	942,720	
148		Walkway pads	3,900	sf	30.00	117,000	
149		Roof hatch w/ guardrail	3	ea	7,900.00	23,700	
150		Guardrail, fall protection	1	ls	75,000.00	75,000	
151							
152		Sub Total : Roof Coverings				6,564,330	
153							
154		<b>SUBTOTAL FOR SHELL</b>				End of Trade	\$ 46,755,083
155							
156							
157	<b>C</b>	<b>INTERIORS</b>					
158	<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
159	C1010	Partitions, Rough Carpentry					
160		New partitions, GWB	227,100	sf	24.00	5,450,400	
161		New partitions, CMU	37,100	sf	35.00	1,298,500	
162		New partitions, glazing w/ frames	3,800	sf	115.00	437,000	
163		New partitions, misc metal for walls	62	tn	4,200.00	260,400	
164		New partitions, HM framed vision panels/openings	160	ea	1,600.00	256,000	
165		New partitions, blocking/framing	268,000	sf	1.00	268,000	
166		New partitions, firestopping	268,000	sf	0.70	187,600	
167		Glazing, interior for HM frames	5,120	sf	55.00	281,600	
168		Interior partitions, sealants/caulking of dissimilar materials	268,000	sf	0.65	174,200	
169							
170		Sub Total : Partitions, Rough Carpentry				8,613,700	
171							
172							
173	C1020	Interior Doors					
174		Frames, HM 3070	290	ea	290.00	84,100	
175		Frames, HM 6070	20	ea	480.00	9,600	
176		Frames, ALUM, 3080	33	ea	1,800.00	59,400	
177		Frames, ALUM, 6080	17	ea	2,400.00	40,800	
178		Doors, WD, 3070	290	ea	880.00	255,200	
179		Doors, WD, 6070	18	ea	1,760.00	31,680	
180		Doors, MTL, 6070	2	ea	480.00	960	
181		Doors, ALUM, 3080	33	ea	6,960.00	229,680	
182		Doors, ALUM, 6080	17	ea	13,920.00	236,640	



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
183	Hardware Set 01	290	ea	1,300.00	377,000		
184	Hardware Set 02	18	ea	1,800.00	32,400		
185	Hardware Set 03	2	ea	1,800.00	3,600		
186	Access doors for MEPs	13	ea	900.00	11,700		
187	Glazing, interior for doors	2,610	sf	55.00	143,550		
188	Interior openings, sealants/caulking of dissimilar materials	259,520	gsf	0.40	103,808		
189							
190	Sub Total : Interior Doors				1,620,118	6.24	
191							
192							
193	C1030 Specialties/Fittings						
194	Millwork, interiors package, Div 064000	259,520	gsf	3.00	778,560		
195	Railings systems	259,520	gsf	0.50	129,760		
196	Wall surfacing, tackboards	259,520	gsf	0.75	194,640		
197	Wall surfacing, markerboards	259,520	gsf	0.45	116,784		
198	Wall surfacing, acoustical	259,520	gsf	1.20	311,424		
199	Wall surfacing, specialty	259,520	gsf	0.40	103,808		
200	Door signage, interior	259,520	gsf	0.90	233,568		
201	Door signage, exterior	259,520	gsf	0.03	7,786		
202	Toilet partitions	259,520	gsf	0.45	116,784		
203	Toilet accessories	259,520	gsf	0.70	181,664		
204	Fire Extinguishers	259,520	gsf	0.05	12,976		
205	AED	259,520	gsf	0.02	4,000		
206	Lockers, student	259,520	gsf	0.54	140,000		
207	Lockers, staff	259,520	gsf	0.09	23,357		
208	Specialties/Fittings, other	259,520	gsf	1.15	298,448		
209							
210	Sub Total : Specialties/Fittings				2,653,558		
211							
212	C20 STAIRCASES						
213	C2010 Stair Construction						
214	Stair # 01, egress	2	ft	39,000.00	78,000		
215	Stair # 02, egress	2	ft	39,000.00	78,000		
216	Stair # 03, feature	2	ft	60,000.00	120,000		
217	Stair # 04, egress	3	ft	39,000.00	117,000		
218	Stair # 05, feature	3	ft	60,000.00	180,000		
219	Stair # 06, egress	3	ft	39,000.00	117,000		
220							
221	Sub Total : Stair Construction				690,000		
222							
223	C2020 Stair Finishes						
224	Stair finishes, egress	10	ft	6,800.00	68,000		
225	Stair finishes, feature	5	ft	11,000.00	55,000		
226							
227	Sub Total : Stair Finishes				123,000		
228							



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		NEW CONSTRUCTION OPTION	BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
		Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades
229	<b>C30</b>	<b>INTERIOR FINISHES</b>					
230	C3010	Wall Finishes					
231		Paint, throughout all interior walls and ceilings surfaces	908,400	sf	0.95	862,980	
232		Wall finishes, tile/stone/hard materials	45,420	sf	30.00	1,362,600	
233		Sound attenuation measures, walls	13,626	sf	31.00	422,406	
234							
235		Sub Total : Wall Finishes				<b>2,647,986</b>	
236							
237	C3020	Floor Finishes					
238		New flooring, mixed materials	246,600	sf	12.00	2,959,200	
239		Moisture mitigation, level 01	140,212	sf	3.00	420,636	
240							
241		Sub Total : Floor Finishes				<b>3,379,836</b>	
242							
243							
244	C3030	Ceiling Finishes					
245		New ceilings, mixed materials	246,600	sf	14.00	3,452,400	
246		Sound attenuation measures, clgs	61,650	sf	14.00	863,100	
247							
248		Sub Total : Ceiling Finishes				<b>4,315,500</b>	
249							
250		<b>SUBTOTAL FOR INTERIORS</b>				<b>End of Trade</b>	<b>\$ 24,043,698</b>
251							
252							
253	<b>D</b>	<b>SERVICES</b>					
254	<b>D10</b>	<b>Elevators &amp; Lifts</b>					
255		Elevator # 01, 3 stop, in-line	1	ea	270,000.00	270,000	
256		Elevator # 02, 4 stop, in-line, F/B	1	ea	425,000.00	425,000	
257							
258		Sub Total : Elevators & Lifts				<b>695,000</b>	
259							
260	<b>D20</b>	<b>Plumbing</b>					
261		Equipment	259,520	gsf	1.50	389,280	
262		(2) High-efficiency gas-fired water heaters				included	
263		Circulation pump				included	
264		Expansion tank				included	
265		Grease interceptors				included	
266		Air compressors				included	
267		Neutralization tank with pH adjustment system (chemical injection)				included	
268		Elevator sump pump with control panel and oil separator				included	
269		Domestic water filtration system - <i>assume</i>				included	
270							
271		Piping system	259,520	gsf	20.80	5,398,016	
272		Domestic water				included	
273		Non-potable water				included	





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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
274	Sanitary waste and vent				included		
275	Laboratory waste and vent				included		
276	Kitchen grease waste system				included		
277	Storm water				included		
278	Natural gas				included		
279	Compressed air				included		
280	Valves and specialties (incl. hook-up equipment)				included		
281							
282	Plumbing fixtures (incl. fixture rough-in)	259,520	gsf	5.40	1,401,408		
283							
284	Other	259,520	gsf	1.50	389,280		
285	Access door	1	ls		incl above		
286	Penetrations and sleeves	1	ls		incl above		
287	Core drill, patching, fire stopping	1	ls		incl above		
288	Clean, flush and test	1	ls		incl above		
289	Disinfection	1	ls		incl above		
290	System validate / Certification	1	ls		incl above		
291	Equipment handling and material distribution	1	ls		incl above		
292	System ID / Valve tags	1	ls		incl above		
293	Shop co-ordination drawings	1	ls		incl above		
294	Supports	1	ls		incl above		
295	Coordination with other trades	1	ls		incl above		
296							
297							
298							
299	<b>D30 HVAC</b>						
300	Equipment (Option-1 - AHU with Displacement)	259,520	gsf	30.00	7,785,600		
301	Roof top mounted air handling units				included		
302	Energy Recovery Ventilators (ERVs)				included		
303	Exhaust fans				included		
304	Air to water source heat pump modular chiller				included		
305	Chilled water pumps with VFD				included		
306	Buffer tank				included		
307	Gas fired condensing boilers				included		
308	Heating hot water pumps with VFD				included		
309	Glycol make up units				included		
310	Expansion tanks				included		
311	Air separators				included		
312	Ductless split A/C units				included		
313	Condensate pumps				included		
314	Hot water cabinet unit heaters / Hot water unit heaters				included		
315	Electric cabinet unit heaters / Electric unit heaters				included		
316	Hot water radiant ceiling panels				included		
317	Heat exchanger - <i>assume</i>				included		
318	Central vehicle exhaust system				included		



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
319	Dust collectors				included		
320							
321	Fuel oil system - duplex pump, fuel oil tank, filtration system, leak detection system, piping, etc.	1	ls	110,000.00	110,000		
322							
323	Piping system	259,520	gsf	16.00	4,152,320		
324	Chilled water pipe with insulation				included		
325	Heating hot water pipe with insulation				included		
326	Refrigerant pipe with insulation				included		
327	Condensate drain pipe with insulation				included		
328	Valves and specialties (incl. hook-up equipment)				included		
329							
330	Air side system	259,520	gsf	22.00	5,709,440		
331	Galvanized steel duct				included		
332	Black iron 12 ga duct @ Kitchen exhaust hood				included		
333	Duct insulation / Acoustical lining				included		
334	Duct insulation @ Kitchen exhaust				included		
335	Air devices (incl. displacement ventilation diffusers)				included		
336	Dampers				included		
337	Kitchen hood with fire suppression - duct connection only				included		
338	Lab fume hoods - duct connection only				included		
339	VAV boxes with sound trap				included		
340	Boiler flue with insulation				included		
341	Boiler combustion air intake				included		
342	Flues up thru roof for HVAC and Plumbing Shops				included		
343	Clean out doors				included		
344	Flexible connections @ Equipment				included		
345							
346	System controls	259,520	gsf	10.00	2,595,200		
347							
348	Other	259,520	gsf	2.40	622,848		
349	Access doors				included		
350	Vibration isolation / Seismic				included		
351	Temporary HVAC				included		
352	Penetrations and sleeves				included		
353	Core drill, patching, fire stopping				included		
354	Test and balance				included		
355	Clean, flush and test (piping system)				included		
356	System start-up / Commissioning				included		
357	Rigging				included		
358	Equipment handling and material distribution				included		
359	System ID / Valve tags				included		
360	Shop co-ordination drawings				included		
361	O&M manuals				included		
362	Equipment, duct and pipe supports				included		



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
363				included			
364							
365				20,975,408			
366							
367	D40						
368							
369							
370				not Req'd			
371				not Req'd			
372							
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391							
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396							
397							
398	D50						
399							
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407							



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
408	600 Amp panel, 208V	1	ea		included		
409	400 Amp panel, 480V	3	ea		included		
410	400 Amp panel, 208V	1	ea		included		
411	400 Amp panel, 208V, 2-section	5	ea		included		
412	225 Amp panel, 480V	1	ea		included		
413	225 Amp panel, 208V, 2-section	7	ea		included		
414	225 Amp panel, 208V	1	ea		included		
415	100 Amp panel, 480V	6	ea		included		
416	100 Amp panel, 208V	9	ea		included		
417	60 Amp panel, 480V	1	ea		included		
418	500 KVA transformer	1	ea		included		
419	300 KVA transformer	1	ea		included		
420	150 KVA transformer	1	ea		included		
421	112.5 KVA transformer	1	ea		included		
422	CT cabinet	1	ea		included		
423	Utility meter	1	ea		by National Grid		
424	Panel mounting assembly	37	ea		included		
425	Transformer support	4	ea		included		
426	Housekeeping concrete pad	3	ea		included		
427							
428	Power Distribution - Emergency Power	259,520	sf	2.25	583,920		
429	400 KW diesel generator	1	ea		included		
430	Sound attenuated enclosure, WP	1	ea		included		
431	72-hr sub-base fuel tank	1	ea		included		
432	Circuit breakers	1	ls		included		
433	Battery charger and block heater	1	ls		included		
434	Remote annunciator	1	ea		included		
435	Unload, unpack, set in place generator and accessories	1	ls		included		
436	600 Amp ATS	1	ea		included		
437	100 Amp ATS	1	ea		included		
438	ATS mounting assembly	2	ea		included		
439							
440	Feeders - Normal and Emergency Power	259,520	sf	3.25	843,440		
441							
442	PV System (future)						
443	3" conduit (empty)	1	ls	15,000.00	15,000		
444							
445	Lighting (interior upgrades)	259,520	gsf	9.00	2,335,680		
446	Lighting (exterior upgrades)	1	ls	40,000.00	40,000		
447							
448	Lighting Control	259,520	gsf	2.55	661,776		
449							
450	Branch Circuitry	259,520	sf	3.00	778,560		
451	Power to equipment and devices (F & I B.O.)				w/above		
452	Food service equipment				w/above		





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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
	Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades	
453	Plumbing electronic faucets/valves				w/above		
454	Hand dryers				w/above		
455	Low voltage systems				w/above		
456							
457	Mechanical Requirements	259,520	sf	4.50	1,167,840		
458							
459	Fire Alarm System	259,520	gsf	7.00	1,816,640		
460	Mass Notification System				w/above		
461							
462	Emergency Electric and Gas Shut-off System	1	ls	25,000.00	25,000		
463							
464	Distributed Antenna System	259,520	gsf	0.30	77,856		
465							
466	Two-way Communication System	259,520	gsf	0.30	77,856		
467							
468	Tel/data System	259,520	gsf	6.50	1,686,880		
469							
470	Audio Visual System	259,520	gsf	2.75	713,680		
471	Public Address				w/above		
472	Clock System				w/above		
473							
474	Security System	259,520	gsf	2.50	648,800		
475	Access Controls				w/above		
476	Video Surveillance System				w/above		
477							
478	Temporary power and light	259,520	gsf	1.75	454,160		
479							
480	Lightning protection/grounding system	1	ls	100,000.00	100,000		
481							
482	Other	259,520	gsf	2.00	519,040		
483	Cutting/patching				included		
484	Sleeves/firestopping				included		
485	Vibration isolation/seismic restraint				included		
486	Testing/commissioning				included		
487	Miscellaneous electrical requirements				included		
488							
489	<b>Sub Total : Electrical</b>				<b>13,441,472</b>		
490							
491	<b><u>SUBTOTAL FOR SERVICES</u></b>				<b>End of Trade</b>	<b>\$ 44,766,024</b>	
492							
493							
494	<b><u>EQUIPMENT &amp; FURNISHINGS</u></b>						
495	<b><u>E10 Equipment</u></b>						
496	E1010 Commercial Equipment						
497	Appliances, residential, staff areas	259,520	gsf	0.06	15,000		



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NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION	
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades			
498			Food Service Equipment, Cafeteria	259,520	gsf	5.50	1,427,360	
499			Food Service Equipment, Shops	259,520	gsf	2.00	519,040	
500			Teaching, screens/projections	259,520	gsf	2.00	519,040	
501			Athletic equipment	259,520	gsf	0.39	100,000	
502								
503			<b>Sub Total : Commercial Equipment</b>				<b>2,580,440</b>	
504								
505	E1020		Institutional Equipment				-	
506			Bleachers	1	ls	225,000.00	225,000	
507			Basketball hoops	6	ea	14,000.00	84,000	
508			Auditorium seating, retractable	350	ea	900.00	315,000	
509			Auditorium seating, fixed	150	ea	490.00	73,500	
510								
511			<b>Sub Total : Institutional Equipment</b>				<b>697,500</b>	
512								
513	E1030		Vehicular Equipment					
514			Not included				-	
515								
516			<b>Sub Total : Vehicular Equipment</b>				-	
517								
518	E1090		Other Equipment					
519			Vocational Shops, equipment/furnishings not covered by Owner FF&E	259,520	gsf	2.08	540,000	
520			Stage equipment	259,520	gsf	1.16	300,000	
521								
522			<b>Sub Total : Other Equipment</b>				<b>840,000</b>	
523								
524								
525	E20		<b>Furnishings</b>					
526	E2010		<b>Fixed Furnishings</b>					
527			Casework-teaching spaces, interiors package, Div 064000	259,520	gsf	3.00	778,560	
528			Science/Lab casework	259,520	gsf	7.00	1,816,640	
529			Shops lockers	259,520	gsf	0.62	160,000	
530			Student lockers	259,520	gsf	0.46	120,000	
531			Athletics lockers	259,520	gsf	0.31	80,000	
532								
533			<b>Sub Total : Fixed Furnishings</b>				<b>2,955,200</b>	
534	E2020		<b>Moveable Furnishings</b>					
535			By Owner					
536								
537			<b>Sub Total : Moveable Furnishings</b>				-	
538								
539			<b>SUBTOTAL FOR EQUIPMENT &amp; FURNISHINGS</b>				<b>End of Trade</b>	<b>\$ 7,073,140</b>
540								
541								
542	F		<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>					



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ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
543	<b>F10</b>	<b>Special Construction</b>					
544		Special Construction		-	-		
545		No work this section		-	-		
546							
547		<b>Sub Total : Special Construction</b>			-		
548							
549							
550	<b>F20</b>	<b>Selective Building Demolition</b>					
551	F2010	<b>Building Elements Demolition</b>					
552		Building Demolition					
553		Demolition of extg school structure, above grade	123,510	sf	13.00	1,605,630	
554							
555		<b>Sub Total : Building Elements Demolition</b>				<b>1,605,630</b>	
556							
557	F2020	<b>Hazardous Components Abatement</b>					
558		Hazardous Components Abatement					
559		Building - hazmat removals	123,510	gsf	14.17	1,750,000	
560							
561		<b>Sub Total : Hazardous Components Abatement</b>				<b>1,750,000</b>	
562							
563		<b>SUBTOTAL FOR SPECIAL CONSTRUCTION &amp; DEMOLITION</b>			End of Trade	\$	<b>3,355,630</b>
564							
565	<b>G</b>	<b>SITWORK</b>					
566	<b>G10</b>	<b>Site Preparation</b>					
567		Clear & grub site; remove grass, shrubs, vegetation, furnishing, etc. Including H&D	459,476	sf	0.15	68,921	
568		Remove trees. Assumed qty	25	ea	450.00	11,250	
569		Remove concrete/asphalt pavement at existing parking lots and drives; inc H&D	215,374	sf	4.00	861,496	
570		Misc site demolition work for site improvements work, work limits	1	ls	141,300.00	141,300	
571		Protection measures	1	ls	216,600.00	216,600	
572		Raise level grade for site improvements work	37,100	cy	65.00	2,411,500	
573							
574		<b>Sub Total : Site Preparation</b>				<b>3,711,067</b>	
575							
576	<b>G20</b>	<b>Site Improvements</b>					
577		New asphalt pavement at parking lots and drives; incl subbase	254,817	sf	3.00	764,451	
578		ADA parking spaces compliance. Assumed qty	4	ea	2,000.00	8,000	
579		New curbing at parking lots, drives, and walks, granite	9,760	lf	47.00	458,720	
580		Concrete pavement	20,105	sf	15.00	301,575	
581		Athletic field improvement, walkways. Assumed qty	5,000	sf	15.00	75,000	
582		Track, running surface, asphalt w/ rubber surface	25,687	sf	24.00	616,488	
583		Baseball field (grass, soils, sand blanket drainage, root zone)	70,544	sf	2.00	141,088	
584		Softball field (grass, soils, sand blanket drainage, root zone)	41,466	sf	2.00	82,932	
585		Irrigation at grassed fields	112,010	sf	0.70	78,407	









South Shore Regional Vocational Technical HS

01/18/2024

Hanover, MA

Option NC-2.1 900

ESTIMATE DETAIL

NEW CONSTRUCTION OPTION			BUILDING AREA (bgsf)			259,520	NEW CONSTRUCTION
Description	Quantity	Unit	Unit Price	Total \$	Subtotal Trades		
676	2" RGS	3,000.00	lf	59.51	178,530		
677	# 3/0 wire	9,000.00	lf	11.49	103,410		
678	# 4 wire	3,000.00	lf	4.57	13,710		
679	Miscellaneous 120V and 208V connections	1	ls	35,000.00	35,000		
680							
681	<b>Sub Total : Site Electrical Utilities</b>				<b>2,272,255</b>		
682							
683	<b>G90 Other Site Construction</b>						
684	No work this section						
685							
686	<b>Sub Total : Other Site Construction</b>				-		
687							
688	<b>SUBTOTAL FOR SITEWORK</b>				<b>End of Trade</b>	<b>\$ 26,252,301</b>	









J0863-16-01  
October 5, 2023

Mr. Judd Christopher  
Drummey Rosanne Anderson, Inc.  
Howard Clock Building  
260 Charles Street, Studio 300  
Waltham, Massachusetts 02453

Re: PDP Geotechnical Engineering Evaluation  
South Shore Vocational Technical High School  
476 Webster Street  
Hanover, Massachusetts

Dear Mr. Christopher:

O'Reilly, Talbot & Okun Associates, Inc. (OTO) is pleased to provide this letter report summarizing our preliminary geotechnical engineering evaluation for use in the PDP study for the renovation/new school building at the South Shore Vocational Technical High School in Hanover, Massachusetts. A Site Locus is provided as Figure 1. A Site Sketch is provided as Figure 2.

We note that subsurface investigations for the proposed construction have not yet been performed at the time of this report, therefore our preliminary evaluation is based upon a review of published geologic information, conditions observed during OTO's recent Phase 1 ESA site visit, and review of a previous geotechnical study performed at the Site by others. This report is subject to the attached limitations.

We note that preliminary subsurface investigations for the proposed construction are planned for October 2023.

## **PROJECT DESCRIPTION**

We understand that the project is in the conceptual design stage and two alternatives are being considered. The location, layout and size of the new structure has not yet been established.

- Alternative 1: The renovation of and potentially an addition to the existing school building.
- Alternative 2: Construction of a new school building at the Site, most likely to the south of the existing building, within the sports fields.

The location of each alternative (Alternatives 1 and 2) is identified on Figure 2. The general discussion of geotechnical considerations provided in this report applies to each alternative.

We understand that the project may include either a new school building or the construction of additions and renovation to the existing school. The project may also include construction of new pavement areas and relocation of athletic fields. It is likely that the new building or addition(s) will be two to three stories high, slab on grade (no basement) structures with a steel frame and brick façade. We expect structural loads to be supported on both isolated column and continuous strip footings. Structural loads are unknown at this time. However, it is expected that maximum column loads will be on the order of 200 kips or less and bearing walls will carry a load of approximately five kips per linear foot. These assumptions will be updated in later design phases.

## EXISTING SITE CONDITIONS

The Site alternatives would be constructed adjacent to the existing school. The South Shore Vocational Technical High School is bounded to the north by Webster Street, and to the west, south and east by wooded areas. Topography generally slopes downwards towards the east, with the playing fields approximately 8 feet below the existing school elevation. We note a small stream was present along the eastern portion of football field during our recent site visit. In addition, we observed bedrock outcrops and boulders at the surface in the southern and eastern portions of the Site.

## PUBLISHED GEOLOGIC CONDITIONS

Information regarding surficial soil conditions was obtained from the surficial geology map for the USGS Cohasset Quadrangle<sup>1</sup>. The Site is located within an area mapped as being underlain by “Thin Glacial Till”. Glacial till is a heterogenous mixture of sand, silt, clay, and gravel that was deposited at the base of the continental glaciers, which covered all of New England during the last period of glaciation. Glacial till is typically very dense, and most buildings can be supported on these soils without experiencing significant settlement. However, one issue commonly associated with Sites underlain by glacial till is that these soils are poor draining, resulting in high groundwater conditions and frost movement of pavements. In addition, large and/or smaller isolated areas of wetlands and/or organic soils (former wetland areas) may be encountered in low lying areas.

According to this map, the glacial till is likely less than 10 to 15 feet thick at the site. The conditions observed in borings performed by others and during our recent Site visit support the information presented on the surficial geologic map.

The Bedrock Geologic Map of Massachusetts<sup>2</sup> indicates that bedrock in the Site vicinity consists of Dedham Granite (igneous rock of the Milford-Dedham Zone). Granitic rocks are typically hard with widely spaced joints. A single bedrock core performed during a previous study confirms the conditions within the bedrock map.

---

<sup>1</sup> US Geologic Survey, “Surficial Materials Map of Cohasset Quadrangle”, by Byron D. Stone, Janet R. Stone and Mary L. DiGiacomo-Cohen, 2018.

<sup>2</sup> Zen, E., Editor, 1983, “Bedrock Geologic Map of Massachusetts” USGS and Massachusetts Department of Public Works.

## ANTICIPATED SUBSURFACE CONDITIONS

OTO reviewed investigations from a previous study performed for stadium light poles for the existing sports field to the rear (southeast) of the existing school. The borings logs and a site plan for the investigations performed in the 2019 light pole study are attached to this report. A summary of these conditions is provided below.

### Soil Conditions

*Topsoil:* Between seven and eight inches of topsoil was present at the ground surface in each boring. The topsoil consisted of loose to medium dense, brown, fine to medium sand with some silt, trace organics (roots) and trace gravel.

*Non-Engineered Fill:* The topsoil was underlain by up to 6 to 9 feet of non-engineered fill in borings B-1, B-2 and B-3. No fill was present in boring B-4. The fill generally consisted of fine to coarse sand, little to trace gravel and little silt. The fill was generally dense although there appears to be a significant variation in density across the site and with depth. This fill was likely placed during the construction of the existing athletic fields.

*Swamp and fine-Grained Deposits:* Conditions at boring B-4 (which was located in the northwest corner of the football field) varied. Approximately seven feet of gray, silty sand with organics (which was identified as a swamp deposit) was observed just below the surface topsoil layer at this location. The organic silty sand was underlain by approximately five feet of slightly plastic silt. In boring B-3, an approximately 18-inch-thick layer of the swamp deposits was present beneath the near surface fill. Approximately nine feet of medium dense clayey sand was present below the fill layer in boring B-3.

*Glacial Till:* Borings B-2 through B-4 encountered glacial till beneath the topsoil, fill or silt/clayey sand layers. The depth to glacial till varied between 8.5 and 16-feet in the borings. The glacial till consisted of a dense to very dense, light brown, well graded, fine to coarse sand with some silt, and varying amounts of gravel. Glacial till commonly contains numerous cobbles and occasional boulders. Occasional layers of sand and gravel with little silt or clay were noted within the glacial till.

*Bedrock:* Drilling refusal was encountered in borings B-1 and B-2 on either a large boulder or bedrock. A 5-foot bedrock core was taken at location B-1. The rock recovered from the core consisted of pink and gray granite. The rock was observed to be fresh and hard, with medium to coarse grains.

### Groundwater Conditions

The depth to groundwater was measured in the field and is presented on the boring logs. Groundwater was observed at a depth of between 4 and 14 feet during drilling but was apparently near the ground surface at the completion of drilling. These data indicate that groundwater is relatedly shallow and artesian conditions may be present. The presence of shallow groundwater will be a significant concern for the new construction.

## OTO SITE VISIT

Mr. Bruce Nickelson of OTO visited the site on September 28, 2023. The significant geotechnical observations during the site visit include.

- Bedrock outcrops or large boulders are present in the fields to the east and south of the existing school building.
- The ground surface in landscaped areas around the school building were wet and soft.
- A small intermediate stream is present along the east side of the athletic fields to the east (rear) of the existing school building. A small amount of water flow was present in this stream at the time of our visit.
- The existing school building is a large footprint single story building.

## PRELIMINARY EVALUATION OF GEOTECHNICAL CONSIDERATIONS

Based upon our review of available information the significant geotechnical considerations for the proposed construction consist of the following:

- Organic soils may be present under portions of the site. Organic soils are typically not a suitable bearing material due to their low strength and high compressibility. In addition, they will tend to compress over extended periods of time due to the degradation of organic matter within the soil mass.
- Bedrock is relatively shallow at the site and boulders are likely present in the shallow glacial till. A significant geotechnical issue includes the potential presence of near surface bedrock and the associated costs with necessary removal to allow for the construction of the building (including slabs and foundations), accessways, and utilities.
- Groundwater is relatively shallow and perched water layers may be encountered during construction and during the service life of the proposed building. Pavements and sidewalks will tend to heave due to frost action and playing fields may be soft and wet. Depending on the silt content of the native Site soils, these materials may be difficult to place and compact these soils during wet periods, and Site access may be difficult due to soft ground conditions during cold and wet periods.

Preliminary geotechnical recommendations to address these considerations are provided below.

### Organic Soils

The organic soils observed in the vicinity of previous borings B-3 and B-4 are a significant geotechnical consideration. Organic soils are soft and compressible and therefore are an unsuitable bearing material beneath foundations, slabs and pavements. Typical engineering solutions to address organic soils include their removal and replacement with imported sand and gravel, the installation of aggregate piers to reinforce the soil mass,



increasing strength and decreasing compressibility. We recommend investigations during final design to define the lateral and vertical limits of organic soils.

#### Bedrock/Large Boulders

We expect that the bedrock surface will be relatively shallow and vary across the Site. Based upon the preliminary evaluation and observations during our Site visit, bedrock is present near the surface in some areas and may impact foundations, stormwater infiltration and utilities.

Depending on building location and final slab elevation, bedrock may be encountered during construction of the building, utilities and associated improvements. Furthermore, large boulders and cobbles were observed at the ground surface. Large excavations (and/or blasting) may be required for the removal of large boulders and bedrock.

Once the building location has been finalized and slab and utility elevations have been established, explorations (including borings, test pits and bedrock coring) will be required to determine the presence of bedrock and large boulders within anticipated cut areas.

#### Foundations

We anticipate that any new addition or building can be supported on normal spread footing foundations bearing on the natural silt, clayey sand or glacial till. These soils are relatively dense, therefore a bearing pressure of 4,000 pounds per square foot can be used for preliminary design. Building settlement should be less than 1 inch. This assumes that any organic soils will be removed or will be improved with aggregate piers. The lateral and vertical limits of organic soils will be a significant factor in foundation design.

#### Water Control

Groundwater is likely present within five feet of the ground surface. We recommend that the building pad for the new building be raised at least two feet above the existing ground surface to limit potential moisture issues. Underdrains will likely be needed beneath and around the perimeter of the building, below pavements and beneath playing fields. In addition, because the glacial till is relatively impermeable, little infiltration will occur and significant runoff will occur off earth slopes. In addition, it may not be possible to infiltrate significant amounts of surface water runoff into the subsurface.

Furthermore, the native soils at the Site may be susceptible to disturbance when wet. Establishing and maintaining proper surface drainage during construction will be necessary to maintain a stable soil subgrade during construction. We note that special provisions (such as reinforced access roads) may be required to facilitate access for construction equipment (such as cranes or lifts) during construction if silty soils are present near the ground surface.

### Seismic Considerations

Earthquake loadings must be considered under requirements in Section 1613 and 1806 of the 9<sup>th</sup> Edition (October 2017) of the Massachusetts State Building Code (MSBC). The 9<sup>th</sup> Edition of the MSBC is based upon the International Building Code 2015 (IBC) with Massachusetts amendments. Note that the IBC refers to ASCE-7 (2010), Minimum Design Loads for Buildings and Other Structures.

Section 1613 of the IBC covers lateral forces imposed on structures from earthquake shaking and requires that every structure be designed and constructed to resist the effects of earthquake motions in accordance with ASCE-7. Lateral forces are dependent on the type and properties of soils present beneath the site, along with the geographic location. Per Table 1604.11, the maximum considered earthquake spectral response acceleration at short periods ( $S_s$ ) and at 1-sec ( $S_1$ ) was determined to be 0.198 and 0.065, respectively, for Hanover, Massachusetts.

We expect that design phase borings will likely support the seismic classification of Site Class C. However, for preliminary design we recommend that a Site Class D be assumed. Furthermore, we do not anticipate that loose, liquefiable soil layers will be present; however, liquefaction considerations will need to be fully evaluated.

### Earthwork Considerations

We anticipate that earthwork for this project will include the following: cuts and fills to form the new building and/or addition pad(s) and surrounding proposed features; excavations for footings and new utilities; placement of compacted engineered fill beneath the building, floor slabs, and pavements (as needed); and the removal and/or treatment of the existing soils to address any localized pocket of unsuitable soils (debris fill or organic soils) or loose areas that may be present.

Depending on the building location and final grading, bedrock may be encountered. Depending on the bedrock surface and depth of any cuts blasting may be required. We note that the granite bedrock at the site is relatively hard.

We note that large excavations may result from the removal of boulders. Premium costs associated with bedrock and large boulder removal will be a significant consideration.

As described above, the near surface soils may contain a significant amount of fines. These fine-grained soils are poorly draining, susceptible to moisture and are difficult to place and compact when wet. Generally, the fines content will dominate soil behavior if a soil mixture contains greater than approximately 35 percent silt or clay. As such, these soils cannot be easily dried or stabilized during winter and wet weather periods. Furthermore, fine grained soils are susceptible to disturbance under traffic loads, particularly during construction, where they experience worse-case conditions. Repeated construction traffic further exacerbates the disturbance of these materials.

If the native glacial till is kept dry and protected, it may be used in deep engineered fills if properly placed and compacted; however, we anticipate that significant quantities of

imported engineering fills may be required. Consideration to weather, scheduling and protection of soils is critical to the successful re-use of these soils as fills, as well as the prevention of disturbance to exposed soil surfaces. Recommendations for the protection of exposed soil surfaces, water control and re-use of on-Site soils should be provided during final design.

If renovations/additions to the existing building is chosen as the alternative, underpinning and/or temporary earth support to protect/support the existing building during construction may be needed.

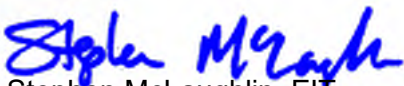
## DESIGN PHASE INVESTIGATIONS AND TESTING

This limited evaluation indicates that subsurface conditions in the general Site vicinity are generally favorable for the project. However, design phase explorations will be necessary prior to final design. The number and scope of additional explorations will depend upon design phasing and the final location and slab elevation of any new building, as well as location of proposed parking areas and utilities. Typically, design phase borings should be completed at a spacing of 100 feet or less. A closer spacing of investigations will likely be required in areas with organic soils.

Borings/test pits should also be performed along utility lines and in deep cuts to evaluate the depth to the bedrock surface. If bedrock or large boulders are encountered in the design phase borings, coring may be required. The design phase geotechnical study should also include grain size distribution analyses to evaluate the suitability of Site soils for re-use as engineered fill and testing to evaluate the hydraulic conductivity of Site soils at proposed stormwater disposal locations (although it appears unlikely that the native Site soils are suitable for stormwater infiltration). If significant quantities of soil are to be removed from the Site, environmental testing of the soils would be appropriate.

We appreciated the opportunity to be of service on this project. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely yours,  
O'Reilly, Talbot & Okun Associates, Inc.



Stephen McLaughlin, EIT  
Senior Project Manager



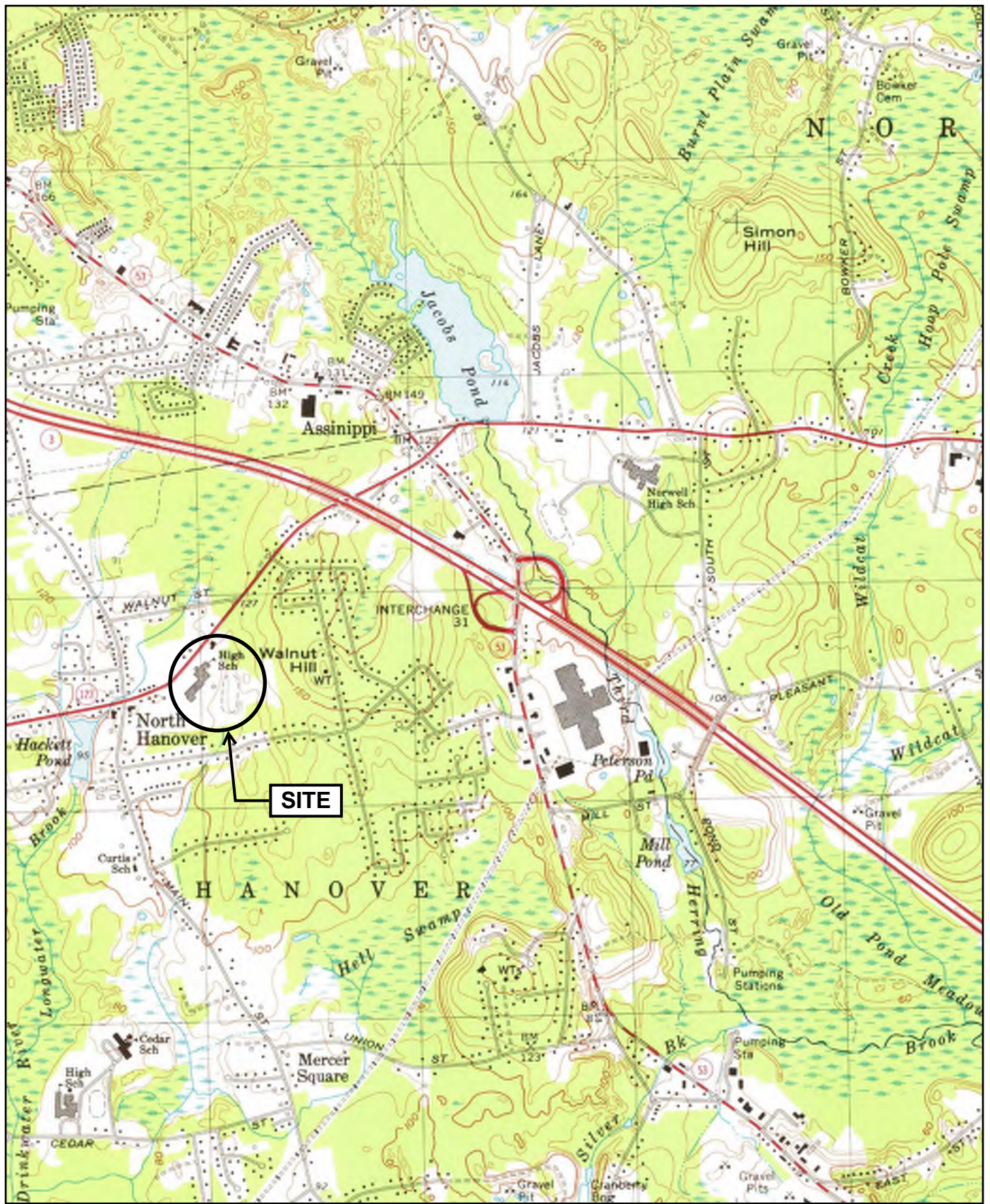
Michael J. Talbot, PE  
Principal

Attachments: Limitations, Site Locus, Site Sketch, Previous Borings & Boring Location Plan

## LIMITATIONS

1. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the Statement of Terms and Conditions attached to our proposal.
2. The analysis and recommendations submitted in this report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it may be necessary to reevaluate the recommendations of this report.
3. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.
4. In the event that any changes in the nature, design or location of the proposed structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by O'Reilly, Talbot & Okun Associates Inc. It is recommended that we be retained to provide a general review of final plans and specifications.
5. Our report was prepared for the exclusive benefit of our client. Reliance upon the report and its conclusions is not made to third parties or future property owners.





1:25,000 SCALE NATIONAL GEODETIC VERTICAL DATUM 1929 10 FOOT CONTOUR INTERVAL

OUJ08009863 DRA In:16-01 South Shore Voc-Tech, 476 Webster St, Hanover, MA/Field Work and Figures/Figure 1 - Site Locus.pdf

**O'Reilly, Talbot & Okun**  
ENGINEERING ASSOCIATES  
293 Bridge Street, Suite 500 Springfield, MA 01103 413.788.6222  
www.OTO-ENV.com

**SOUTH SHORE VOCATIONAL  
TECHNICAL HIGH SCHOOL**  
476 WEBSTER STREET  
HANOVER, MASSACHUSETTS

**SITE LOCUS**

Topographic Map Quadrant:  
COHASSET, MA  
Map Version: 1974  
Current As Of: 1978  
Date: SEPTEMBER 2023

PROJECT No.  
**J0863-14-01**  
FIGURE No.  
**1**





NOTES:

- 1. PLAN PROVIDED TO OTO IN ELECTRONIC FORMAT.
- 2. ALL DATA IS TO BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED IN THE DEVELOPMENT OF THIS PLAN

Figure Not to Scale, for Illustrative Purposes Only

FILE



**O'Reilly, Talbot & Okun**  
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**SOUTH SHORE VOCATIONAL TECHNICAL  
HIGH SCHOOL**  
476 WEBSTER STREET  
HANOVER, MASSACHUSETTS

---

**SITE SKETCH**

Designed By: SMM  
Drawn By: SMM  
Checked By: MJT  
Date: 10/5/2023  
Revised Date:

PROJECT No.  
**J0863-16-01**

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FIGURE No.  
**2**





Imagery ©2019 Google, Map data ©2019 Google 100 ft


Note

Figure based on an aerial photograph retrieved from Google Maps on January 18, 2019.

Legend



Approximate location of borings advanced by Northern Drill Services, Inc. of Northborough, MA on January 14, 2019 and observed by LGCI.

Client: <b>Drumme Rosane Anderson, Inc.</b>	Project: <b>Proposed Field Lighting -South Shore Vocational Technical High School</b>	<b>Figure 2 – Boring Location Plan</b>	
 <b>LGCI</b> Lahlaf Geotechnical Consulting, Inc.	Project Location: <b>Hanover, MA</b>	LGCI Project No.: <b>1863</b>	Date: <b>Feb. 2019</b>

<b>CLIENT:</b> <u>Drummey Rosane Anderson, Inc.</u>	<b>PROJECT NAME:</b> <u>Proposed SSVT HS Lights</u>
<b>LGCI PROJECT NUMBER:</b> <u>1863</u>	<b>PROJECT LOCATION:</b> <u>Hanover, Massachusetts</u>
<b>DATE STARTED:</b> <u>1/14/19</u> <b>DATE COMPLETED:</b> <u>1/14/19</u>	<b>DRILLING SUBCONTRACTOR:</b> <u>Northern Drill Service, Inc.</u>
<b>BORING LOCATION:</b> <u>Northeastern corner of football field</u>	<b>DRILLING FOREMAN:</b> <u>Tim Tucker</u>
<b>COORDINATES:</b> <u>NA</u>	<b>DRILLING METHOD:</b> <u>HSA (3-1/4" I.D.) then 4-inch casing</u>
<b>SURFACE EI.:</b> <u>(see note 1)</u> <b>TOTAL DEPTH:</b> <u>15 ft.</u>	<b>DRILL RIG TYPE/MODEL:</b> <u>Mobile B-48 ATV Rig</u>
<b>WEATHER:</b> <u>30s / Overcast, Flurries</u>	<b>HAMMER TYPE:</b> <u>Automatic</u>
<b>GROUNDWATER LEVELS:</b>	<b>HAMMER WEIGHT:</b> <u>140 lb.</u> <b>HAMMER DROP:</b> <u>30 in.</u>
▽ <b>DURING DRILLING:</b> <u>8.0 ft. Based on sample moisture.</u>	<b>SPLIT SPOON DIA.:</b> <u>1.375 in. I.D., 2 in. O.D.</u>
▽ <b>AT END OF DRILLING:</b> <u>0.0 ft. After coring.</u>	<b>CORE BARREL SIZE:</b> <u>NX</u>
▽ <b>OTHER:</b> <u>-</u>	<b>LOGGED BY:</b> <u>JT</u> <b>CHECKED BY:</b> <u>AML</u>

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
		0	S1	15-5-6-10 (11)	24/16		Topsoil	S1 - Top 8": Silty SAND (SM), fine to medium, 20-25% fines, trace grass, trace roots, trace organic fines, brown, moist
		2	S2	15-17-17-38 (34)	24/15		Fill	Bot. 8": Well graded SAND with Silt and Gravel (SW-SM), fine to coarse, 10-15% fines, 15-20% fine to coarse gravel, tan, moist S2 - Similar to Bot. 8" of S1
5		4	S3	50/0"	0/0	1		REMARK 1: Rig chatter 4 ft to 6 ft beneath ground surface. S3 - No Advance/Recovery, material in tip of spoon appears to be a piece of rock.
		6	S4	17-14-16-84/5" (30)	23/20	2		S4 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 15-20% fine to coarse gravel, tan, moist REMARK 2: Rig chatter 7 ft to 9 ft beneath ground surface.
		7.9						▽
10		9	S5	50/3"	3/3	3	Bedrock	S5 - Poorly graded GRAVEL with Sand (GP), fine, angular, 0-5% fines, 30-35% fine to coarse sand, brown, moist (possible rock)
		9.3				4		REMARK 3: Auger refusal at 9 ft beneath ground surface. Offset boring 7 ft south. Auger refusal at 9 ft beneath ground surface in offset borehole. REMARK 4: Attempted rock core at 10 ft in offset location. C1 - min/ft: 2:35, 2:17, 2:38, 2:07, 2:08 REC=97%, RQD=87% Hard, fresh, slightly fractured, medium- to coarse-grained, pink and gray, GRANITE
15		15	C1		60/58			Bottom of borehole at 15.0 feet. Both boreholes backfilled with drill cuttings.
20								
25								

**GENERAL NOTES:**

- The ground surface elevations are not available.



<b>CLIENT:</b> <u>Drummeey Rosane Anderson, Inc.</u>	<b>PROJECT NAME:</b> <u>Proposed SSVT HS Lights</u>
<b>LGCI PROJECT NUMBER:</b> <u>1863</u>	<b>PROJECT LOCATION:</b> <u>Hanover, Massachusetts</u>
<b>DATE STARTED:</b> <u>1/14/19</u> <b>DATE COMPLETED:</b> <u>1/14/19</u>	<b>DRILLING SUBCONTRACTOR:</b> <u>Northern Drill Service, Inc.</u>
<b>BORING LOCATION:</b> <u>Southeastern corner of football field</u>	<b>DRILLING FOREMAN:</b> <u>Tim Tucker</u>
<b>COORDINATES:</b> <u>NA</u>	<b>DRILLING METHOD:</b> <u>Hollow Stem Auger (3-1/4" I.D.)</u>
<b>SURFACE EI.:</b> <u>(see note 1)</u> <b>TOTAL DEPTH:</b> <u>18 ft.</u>	<b>DRILL RIG TYPE/MODEL:</b> <u>Mobile B-48 ATV Rig</u>
<b>WEATHER:</b> <u>20s / Snowy</u>	<b>HAMMER TYPE:</b> <u>Automatic</u>
<b>GROUNDWATER LEVELS:</b>	<b>HAMMER WEIGHT:</b> <u>140 lb.</u> <b>HAMMER DROP:</b> <u>30 in.</u>
▽ <b>DURING DRILLING:</b> <u>14.0 ft. Based on sample moisture.</u>	<b>SPLIT SPOON DIA.:</b> <u>1.375 in. I.D., 2 in. O.D.</u>
▽ <b>AT END OF DRILLING:</b> <u>4.0 ft.</u>	<b>CORE BARREL SIZE:</b> _____
▽ <b>OTHER:</b> <u>-</u>	<b>LOGGED BY:</b> <u>JT</u> <b>CHECKED BY:</b> <u>AML</u>

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El. (ft.)	Material Description
		0	S1	16-8-7-8 (15)	24/17		Topsoil	0.6	S1 - Top 7": Silty SAND (SM), fine to medium, 25-30% fines, trace grass, trace roots, trace organic fines, brown, moist
		2	S2	10-10-10-10 (20)	24/15		Fill		Bot. 10": Poorly Graded SAND with Silt (SP-SM), fine to medium, 5-10% fines, trace fine gravel, trace organic soil, brown, moist
		4	S3	2-4-5-6 (9)	24/20				S2 - Similar to Bot. 10" of S1, trace coarse gravel
5									▽ S3 - Top 14": Silty SAND (SM), fine to medium, ~30% slightly to moderately plastic fines, ~5% fine gravel, brown, wet
		6	S4	6-9-15-30 (24)	24/21		Clayey Sand	6.0	Bot. 6": Well graded SAND with Silt (SW-SM), fine to coarse, 10-15% fines, 5-10% fine gravel, trace organic soil, brown, moist
		8						8.5	S4 - Clayey SAND (SC), fine to medium, trace coarse, 25-30% fines, slightly plastic, tan, moist
10		9	S5	10-15-18-15 (33)	24/19		Sand		S5 - Well graded SAND (SW), fine to coarse, 5-10% fines, trace fine gravel, tan, moist
		11							
15		14	S6	4-12-10-19 (22)	24/16	1			▽ REMARK 1: About 4" of possible blow-in observed in sample. S6 - Similar to S5, wet
		16							
		18	S7	50/0"	0/0	2		18.0	REMARK 2: Auger refusal at 18 ft. S7 - No Advance/Recovery, material in tip of spoon appears to be similar to S5. Bottom of borehole at 18.0 feet. Backfilled borehole with drill cuttings.
20									
25									

**GENERAL NOTES:**

- The ground surface elevations are not available.

**CLIENT:** Drummey Rosane Anderson, Inc.      **PROJECT NAME:** Proposed SSVT HS Lights  
**LGCI PROJECT NUMBER:** 1863      **PROJECT LOCATION:** Hanover, Massachusetts

**DATE STARTED:** 1/14/19      **DATE COMPLETED:** 1/14/19      **DRILLING SUBCONTRACTOR:** Northern Drill Service, Inc.  
**BORING LOCATION:** Southwestern corner of football field      **DRILLING FOREMAN:** Tim Tucker  
**COORDINATES:** NA      **DRILLING METHOD:** Hollow Stem Auger (3-1/4" I.D.)  
**SURFACE EI.:** (see note 1)      **TOTAL DEPTH:** 21 ft.      **DRILL RIG TYPE/MODEL:** Mobile B-48 ATV Rig  
**WEATHER:** 20s / Overcast      **HAMMER TYPE:** Automatic  
**GROUNDWATER LEVELS:**      **HAMMER WEIGHT:** 140 lb.      **HAMMER DROP:** 30 in.  
 ∇ **DURING DRILLING:** 4.0 ft. Based on sample moisture.      **SPLIT SPOON DIA.:** 1.375 in. I.D., 2 in. O.D.  
 ▼ **AT END OF DRILLING:** 2.0 ft.      **CORE BARREL SIZE:** \_\_\_\_\_  
 ▼ **OTHER:** -      **LOGGED BY:** JT      **CHECKED BY:** AML

Depth (ft.)	EI. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
0							Topsoil	S1 - Top 8": Silty SAND (SM), fine to medium, 20-25% fines, trace grass, trace roots, trace organic fines, brown, moist
2			S1	7-4-6-7 (10)	24/16		Fill	Bot. 8": Well graded SAND with Silt (SW-SM), fine to medium, trace coarse, 10-15% fines, trace fine gravel, brown, moist S2 - Similar to Bot. 8" of S1, wet
4			S2	9-6-6-3 (12)	24/7			S3 - Silty SAND (SM), fine to medium, trace coarse, 20-25% fines, trace fine gravel, brown to gray, wet
6			S3	1-2-2-8 (4)	24/11			
8			S4	14-12-10-13 (22)	24/24		Swamp Deposits	S4 - Top 18": Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 20-25% fine gravel, trace organic soil, gray to dark brown, wet
10							Clayey Sand	Bot. 6": Clayey SAND (SC), fine to medium, 25-30% fines, slightly plastic, gray, wet
14			S5	22-16-10-14 (26)	24/5			S5 - Clayey SAND (SC), fine to medium, 15-20% fines, slightly plastic, 10-15% fine gravel, brown, wet
16							Sand	
19			S6	26-25-18-24 (43)	24/14			S6 - Well graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 20-25% fine gravel, gray and pink, wet
21								Bottom of borehole at 21.0 feet. Backfilled borehole with drill cuttings.
25								

**GENERAL NOTES:**

- The ground surface elevations are not available.

<b>CLIENT:</b> <u>Drummey Rosane Anderson, Inc.</u>	<b>PROJECT NAME:</b> <u>Proposed SSVT HS Lights</u>
<b>LGCI PROJECT NUMBER:</b> <u>1863</u>	<b>PROJECT LOCATION:</b> <u>Hanover, Massachusetts</u>
<b>DATE STARTED:</b> <u>1/14/19</u> <b>DATE COMPLETED:</b> <u>1/14/19</u>	<b>DRILLING SUBCONTRACTOR:</b> <u>Northern Drill Service, Inc.</u>
<b>BORING LOCATION:</b> <u>Northwestern corner of football field</u>	<b>DRILLING FOREMAN:</b> <u>Tim Tucker</u>
<b>COORDINATES:</b> <u>NA</u>	<b>DRILLING METHOD:</b> <u>Hollow Stem Auger (3-1/4" I.D.)</u>
<b>SURFACE EI.:</b> <u>(see note 1)</u> <b>TOTAL DEPTH:</b> <u>21 ft.</u>	<b>DRILL RIG TYPE/MODEL:</b> <u>Mobile B-48 ATV Rig</u>
<b>WEATHER:</b> <u>20s / Overcast</u>	<b>HAMMER TYPE:</b> <u>Automatic</u>
<b>GROUNDWATER LEVELS:</b>	<b>HAMMER WEIGHT:</b> <u>140 lb.</u> <b>HAMMER DROP:</b> <u>30 in.</u>
▽ <b>DURING DRILLING:</b> <u>6.0 ft. Based on sample moisture.</u>	<b>SPLIT SPOON DIA.:</b> <u>1.375 in. I.D., 2 in. O.D.</u>
▽ <b>AT END OF DRILLING:</b> <u>4.0 ft.</u>	<b>CORE BARREL SIZE:</b> _____
▽ <b>OTHER:</b> <u>-</u>	<b>LOGGED BY:</b> <u>JT</u> <b>CHECKED BY:</b> <u>AML</u>

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
		0	S1	5-2-4-2 (6)	24/12		Topsoil	S1 - Silty SAND (SM), fine to medium, trace coarse, 25-30% fines, 0-5% coarse gravel, angular, trace grass, trace roots, trace organic, fines, brown, moist
		2	S2	3-4-3-2 (7)	24/0		Swamp Deposits	S2 - No Recovery
5		4	S3	0-1-3-13 (4)	24/7			S3 - Silty SAND (SM), fine to medium, trace coarse, 25-30% fines, gray, moist
		6	S4	14-18-6-7 (24)	24/18			S4 - Top 14": Similar to S3, wet
		8	S5	2-3-5-2 (8)	24/16		Silt	Bot. 4": SILT (ML), slightly plastic, trace fine sand, gray, wet
10		10						S5 - Similar to Bot. 4" of S4
		14	S6	14-19-32-30 (51)	24/8		Sand	S6 - Well graded SAND with Silt and Gravel (SW-SM), fine to coarse, 10-15% fines, 20-25% fine gravel, brown, wet
15		16						
		19	S7	46-41-11-12 (52)	24/7			S7 - Silty SAND (SM), fine to coarse, 20-25% fines, trace fine gravel, tan, wet (possible weathered rock)
20		21						Bottom of borehole at 21.0 feet. Backfilled borehole with drill cuttings.
25								

**GENERAL NOTES:**

1. The ground surface elevations are not available.





950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A  
MASSACHUSETTS HISTORICAL COMMISSION  
220 MORRISSEY BOULEVARD  
BOSTON, MASS. 02125  
617-727-8470, FAX: 617-727-5128

**PROJECT NOTIFICATION FORM**

Project Name: South Shore Vocational Technical HS

Location / Address: 476 Webster Street

City / Town: Hanover, MA 02339

**Project Proponent**

Name: South Shore Vocational Technical HS

Address: 476 Webster Street

City/Town/Zip/Telephone: Hanover, MA 02339

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name Type of License or funding (specify)

Massachusetts School Building Authority (MSBA) School Funding Grant

**Project Description (narrative):**

Construction of a new high school, including new athletic fields, roads and parking lots.

**Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.**

New construction will require demolition of the entire existing building and several appurtenances.

**Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.**

Project does not require any rehabilitation of any existing buildings.

**Does the project include new construction? If so, describe (attach plans and elevations if necessary).**

See attached floor plans and site plans for the new construction.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

There are no historic or archaeological properties within the project area.

What is the total acreage of the project area? 42.59 acres

Woodland	6.76	acres	Productive Resources:		
Wetland	14.29	acres	Agriculture	0	acres
Floodplain	0	acres	Forestry	0	acres
Open space	0	acres	Mining/Extraction	0	acres
Developed	21.54	acres	Total Project Acreage	0	acres

What is the acreage of the proposed new construction? \_\_\_\_\_ acres

What is the present land use of the project area?

Presently the land is used for the South Shore Vocational Technical High School and associated roads, parking areas, parking areas and athletic fields.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

See attached.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

---

Signature of Person submitting this form: \_\_\_\_\_ Date: \_\_\_\_\_

Name: R. Judd Christopher - DRA Architects

Address: 260 Charles Street, Studio 300

City/Town/Zip: Waltham, MA 02453

Telephone: (617) 909-3536

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

*Guidance for Completing MHC's Project Notification Form (950 CMR 71.00, Appendix A)*

- ❖ Please make sure you **type or print legibly** the Project Notification Form (PNF) and fill out **all** sections of the form.
- ❖ Please submit a PNF for **each** project separately. This will facilitate MHC's review of multiple project submissions.
- ❖ Please include the street and number in the address line of the project area. Please be sure to specify the town name.
- ❖ Please make sure you fill out *both* the **project address section** and the **project contact** section. Please note that these two addresses may be the same in some cases. It is important for MHC to have a contact person in order to facilitate review, should questions arise.
- ❖ The funding, licensing, and permitting section **must be completed** in order for MHC to review the PNF. Be sure to list *all* funding, licensing and permitting involved with the entire project; this includes **federally** funded, licensed, and permitted projects, as well as **state** funded, licensed, and permitted projects. Some examples of common funding, licensing, and permitting agencies and funding sources are: **Army Corps of Engineers; Federal Communications Commission; Community Development Block Grants; School Building Assistance from the Massachusetts Department of Education; Department of Housing and Community Development; Department of Environmental Protection (permits such as sewer connection, wetlands, or Chapter 91 permits); Massachusetts Highway Department (curb cut permits), etc. There are many others.**
- ❖ Please be sure to **describe** the proposed project in **detail**. Attach additional pages if necessary. If dates of construction on buildings or dates of alterations to a site are known, please be sure to include this information in your project description.
- ❖ Please include photographs of the proposed project site. If the project involves demolition or rehabilitation of a building(s), be sure to include photos of major elevations of the building(s). Please also be sure to label photographs. Attach the most current project plans and elevations if available.
- ❖ **Please be sure to include a photocopy of the pertinent section of the U.S.G.S. map with your submission.** The MHC cannot review a PNF without a U.S.G.S. section map. You can purchase U.S.G.S. maps at local camping, hiking, and sporting goods stores, or download U.S.G.S. maps from the World Wide Web at [www.topozone.com](http://www.topozone.com); or make a photocopy of U.S.G.S. maps at libraries.
- ❖ Do not use other maps instead of the U.S.G.S. map. However, additional maps such as plot plans or assessors' maps may be included **in addition** to the U.S.G.S. section map.
- ❖ **Boundaries of the project area** should be specific. Do not circle a large plot of land on the U.S.G.S. map and indicate that the project falls within the circle.

*This guidance document is offered to assist in compliance with M.G.L. Chapter 9, Section 26-27c, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00)*

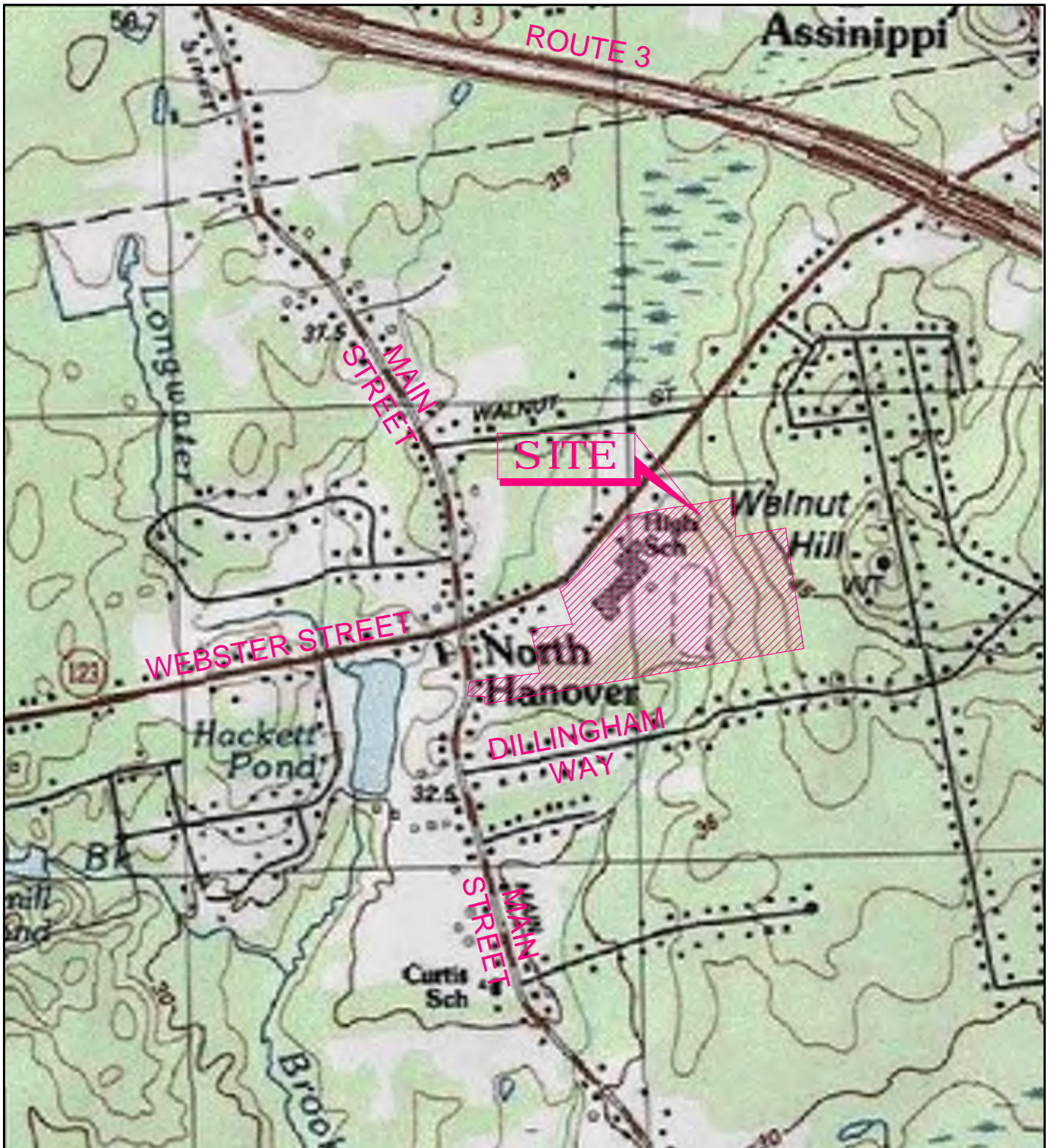
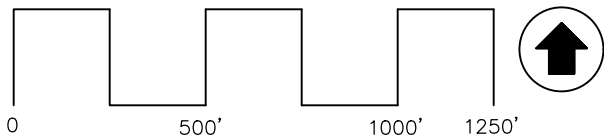


FIGURE - 1



U.S. GEOLOGICAL SURVEY  
7.5 X 15 MINUTE SERIES

© MCKENZIE ENGINEERING GROUP, INC.



150 LONGWATER DRIVE, SUITE 101  
NORWELL, MASSACHUSETTS 02061  
PHONE: (781) 792-3900  
FACSIMILE: (781) 792-0333  
WWW.MCKENG.COM

**USGS LOCUS MAP**

476 WEBSTER STREET  
ASSESSOR'S MAP 10 PARCEL 19  
HANOVER, MASSACHUSETTS



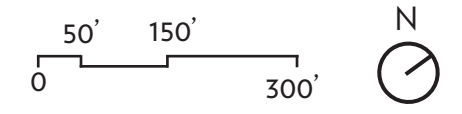
# EXISTING SITE



## LEGEND

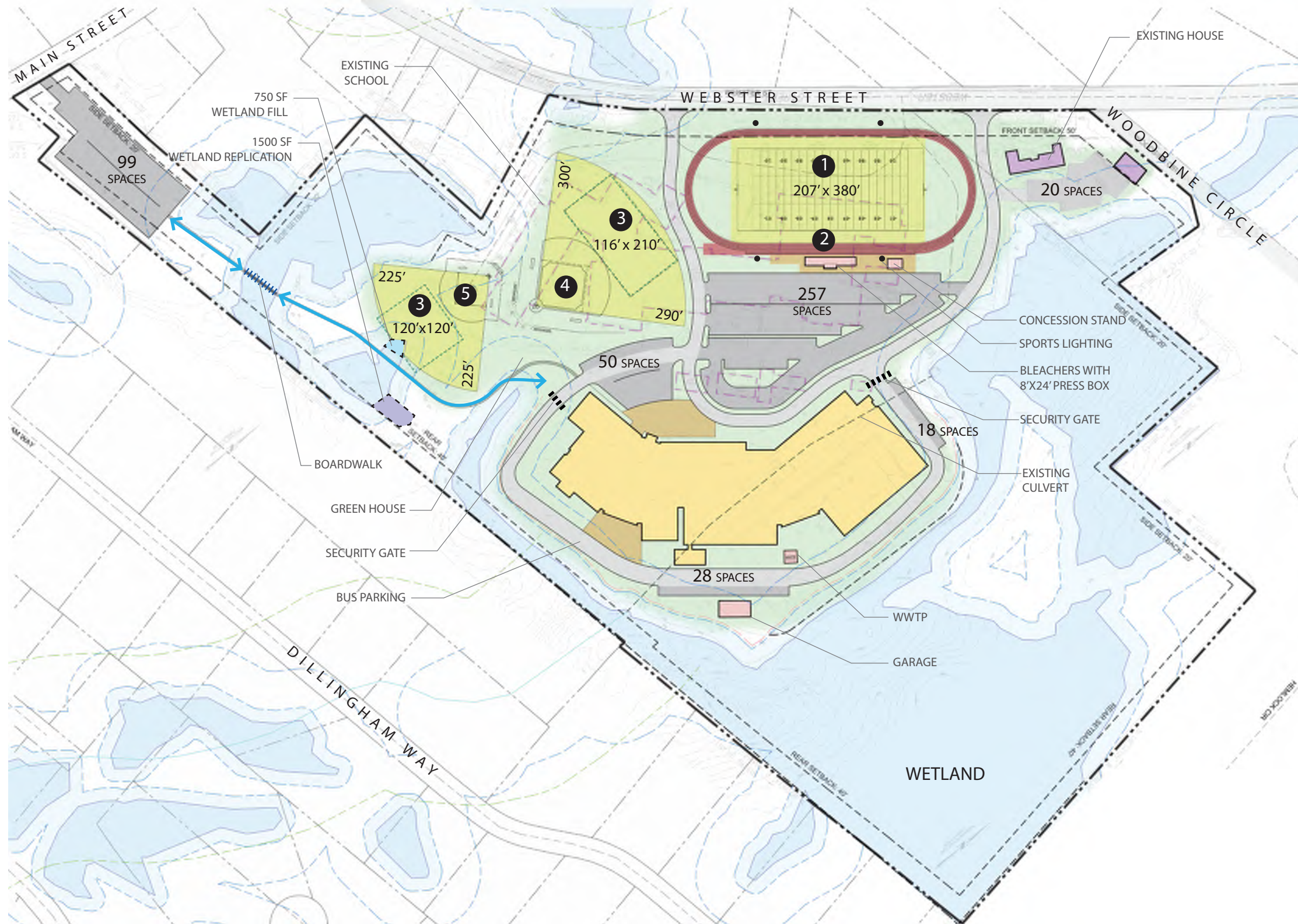
- EXISTING STRUCTURES
- ATHLETICS
- WETLAND
- 35' WETLAND BUFFER
- SECURITY GATE
- 1 MULTI-PURPOSE FIELD
- 2 RUNNING TRACK
- 3 SOFTBALL
- 4 BASEBALL
- 5 PRACTICE FIELD

**TOTAL EXISTING PARKING:**  
 304 SPACES & 15 BUS SPACES (SCHOOL)  
 20 SPACES (HOUSE)





# NEW CONSTRUCTION 2-0



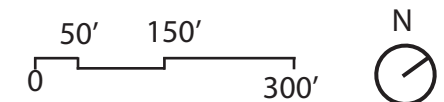
## LEGEND

- EXISTING STRUCTURES
- PROPOSED STRUCTURES
- NEW SCHOOL
- ATHLETICS
- ENTRY PLAZA
- WETLAND
- 35' WETLAND BUFFER
- SECURITY GATE
- 1 SYNTHETIC TURF MULTI-PURPOSE FIELD
- 2 RUNNING TRACK
- 3 PRACTICE FIELD
- 4 BASEBALL
- 5 SOFTBALL

**TOTAL PARKING:**  
 EXISTING: 304 SPACES  
 & 15 BUS SPACES

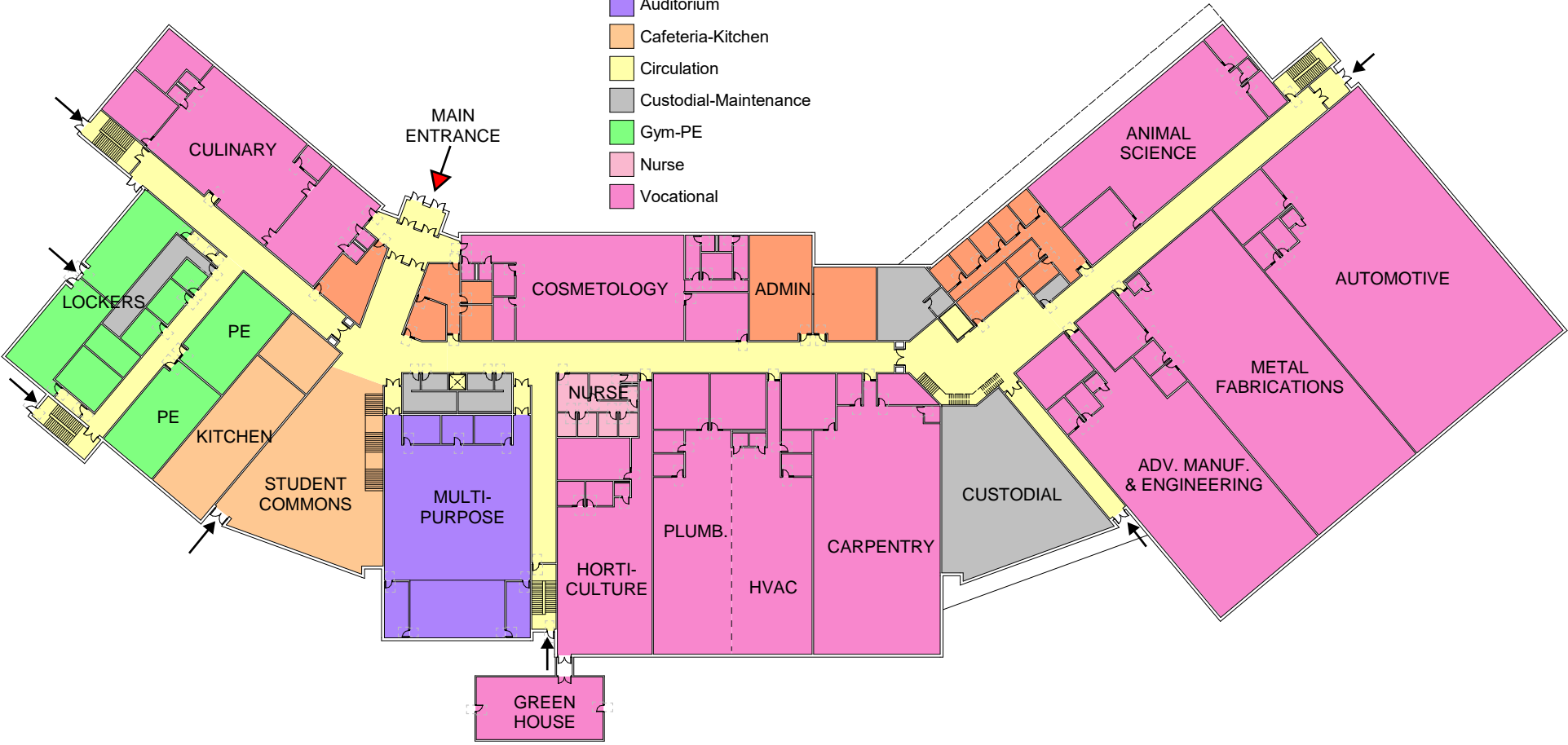
PROPOSED: 353 SPACES (9'x18')  
 TARGET: 426 SPACES

ADDITIONAL:  
 99 SPACES (MAIN ST.)  
 20 SPACES (EX. HOUSE)

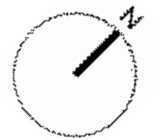
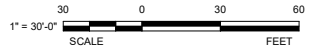


Departments

- Admin-Teacher Support
- Auditorium
- Cafeteria-Kitchen
- Circulation
- Custodial-Maintenance
- Gym-PE
- Nurse
- Vocational



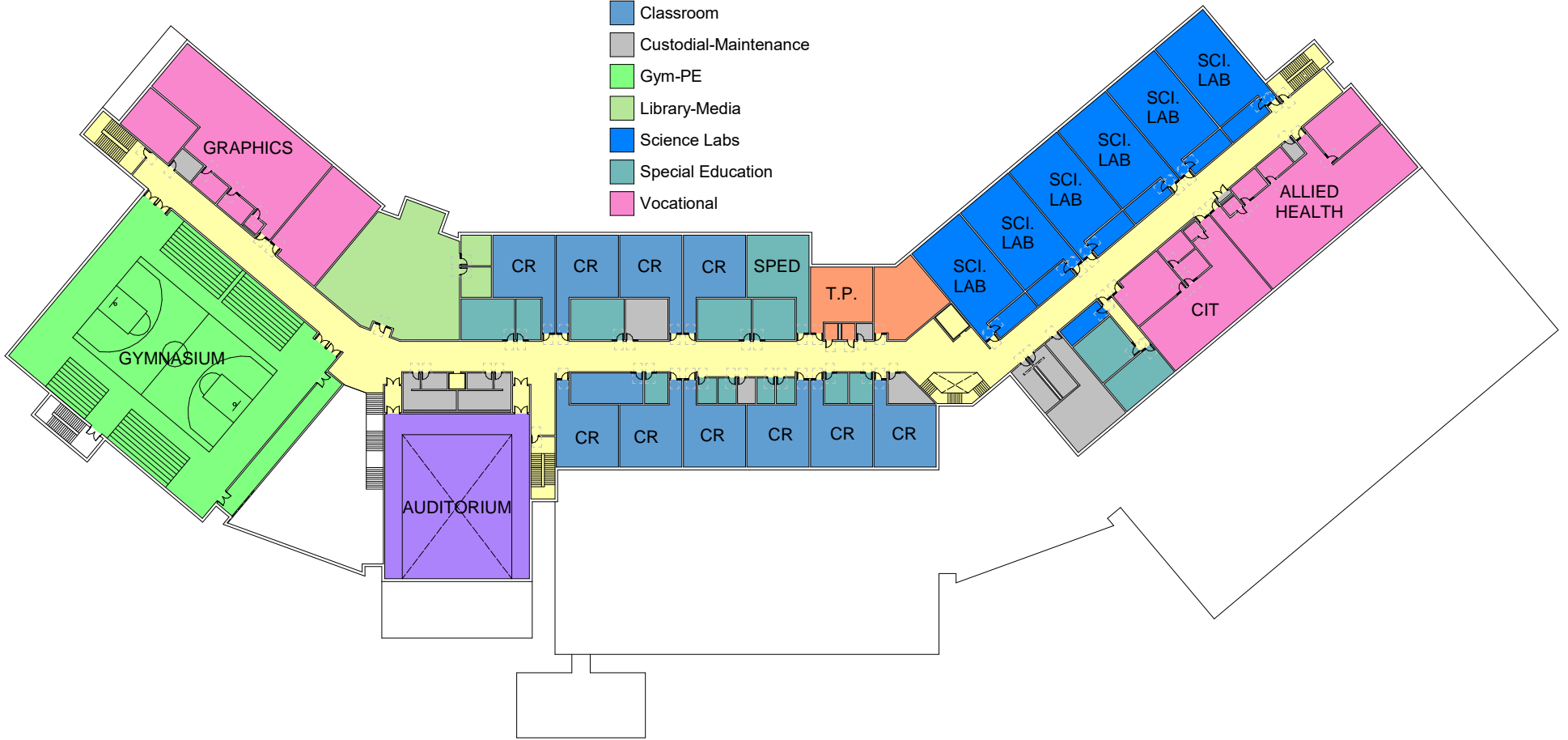
**OPTION NC-2 FIRST FLOOR PLAN - 900 ENROLLMENT**





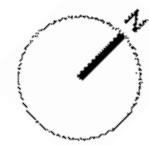
Departments

- Admin-Teacher Support
- Auditorium
- Circulation
- Classroom
- Custodial-Maintenance
- Gym-PE
- Library-Media
- Science Labs
- Special Education
- Vocational









**OPTION NC-2 SECOND FLOOR PLAN - 900 ENROLLMENT**

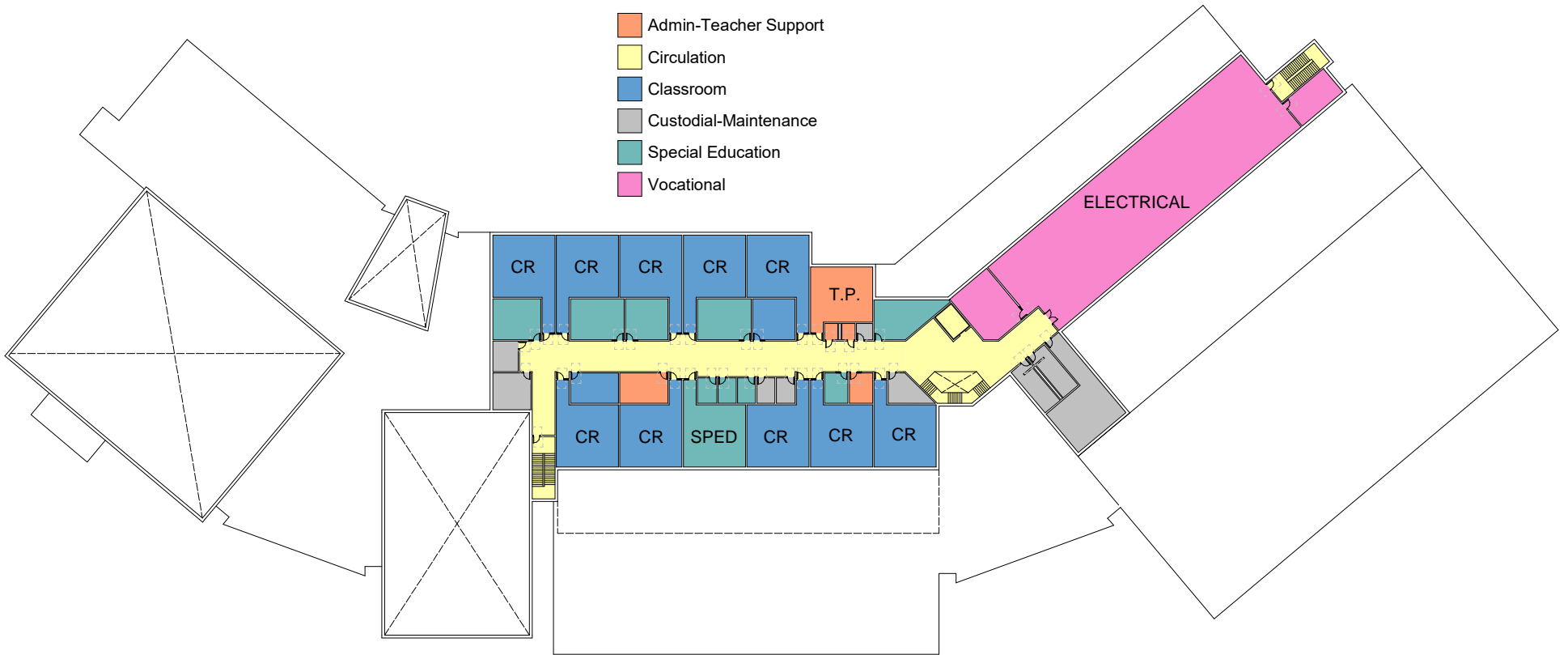
1" = 30'-0"  
 SCALE FEET



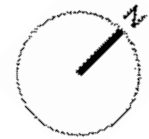
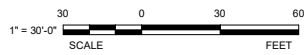


Departments

-  Admin-Teacher Support
-  Circulation
-  Classroom
-  Custodial-Maintenance
-  Special Education
-  Vocational



**OPTION NC-2 THIRD FLOOR PLAN**





Front Façade View along Webster Street

## **South Shore Vocational Technical School**

**Photographs of the Existing Building**

**Massachusetts Historical Commission**

**Project Notification Form**

Drummey Rosane Anderson

02/27/2024



Photograph of the Main Entrance



Photograph at Front Courtyard towards the Cafeteria





Photograph of the 1992 Addition looking at Auto Collision



Photograph of the back courtyard in the 1992 Addition





Photograph on the Construction Shop canopy - Original Building



Photograph looking towards Metal Fabrications - Original Building



Photograph of some of the Out Buildings - Maintenance Garage and Barn



Photograph of the 1992 Addition looking towards the Electrical Shop

## Judd Christopher

---

**From:** iShip\_Services\_102@iship.com  
**Sent:** Tuesday, February 27, 2024 11:59 AM  
**To:** Judd Christopher  
**Subject:** Your shipment will soon be on its way



# A shipment has been created

A package shipping to MA Historic  
Commission will be picked up by  
UPS on Tuesday, February 27,  
2024.



### **Expected delivery**

Wednesday, February 28, 2024 End of Day

### **Tracking information**

Carrier: UPS Ground

Tracking #: 1Z02A6R30337927513

Ship Ref 1: CY

Ship Ref 2: --

## Recipient

MA Historic Commission

--

BOSTON, MA 02125-3384

(street address omitted intentionally)

## Sender

Judd Christopher

--

Waltham, MA 02453

(street address omitted intentionally)

## Shipped from

THE UPS STORE #2495

(617) 484-9300

## Sender's message

--

## Tracking updates



Please note: Tracking information may not be available until several hours after the carrier picks up the package. Carriers normally pick up in the late afternoon.

## Have a question?

Please contact UPS directly at 1-800-PICK-UPS (1-800-742-5877), and have your tracking number ready.



# Great offers on everything, direct to your inbox

At The UPS Store®, we do all we can to help our customers stay one step ahead. Join our email program today and we'll regularly send great offers and resources direct to your inbox – so you can make more of your time and money.



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# SOUTH SHORE Technical High School

Hanover, Massachusetts



*Serving the communities of:*  
Abington, Cohasset, Hanover, Hansen,  
Norwell, Rockland, Scituate, Whitman,  
& Marshfield



## Key Educational Concepts

---

- Real world connections to **21<sup>st</sup> C skills**
- Academic & Career Technical **Integration**
- Classroom **Neighborhoods/** Career Clusters
- **Flexibility**, Multi-Purpose spaces
- **Community** Accessibility & Identity
- **Sustainable**
- **Cost-effective**
- **Transparent** Process

## Key Facility Needs

---

- **Right-Sizing Shops**
- **Adding Ch.74 Programs**
- **Collaborative, Break-out areas**
- **Small Group Rooms**
- **Customer access to public shops**
- **Related Classrooms in each shop**
- **MP Auditorium/ Large Group space**
- **Locker Room parity; Gender Neutral accommodations**



# Existing Conditions



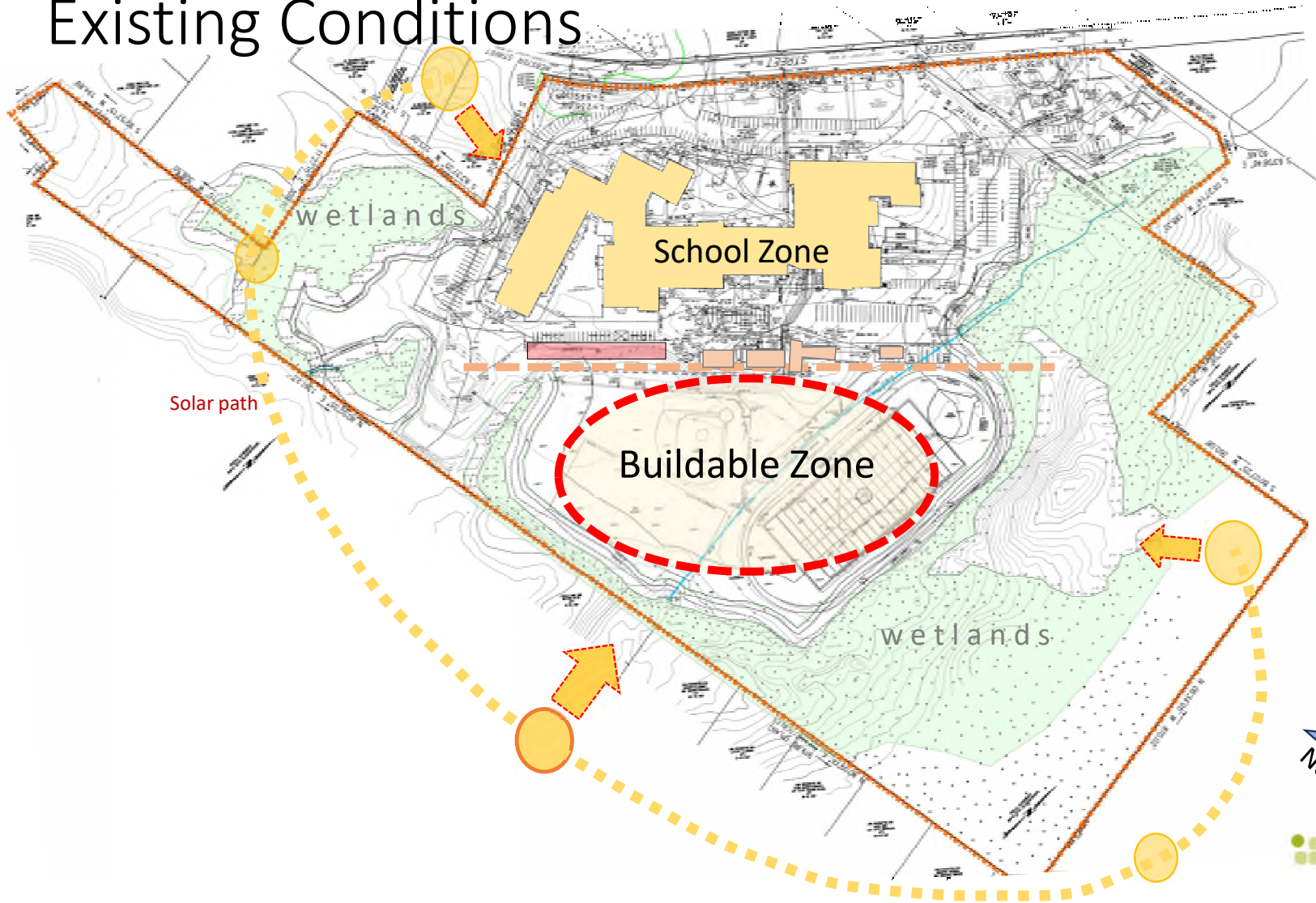
Main Street

Webster Street

North



# Existing Conditions



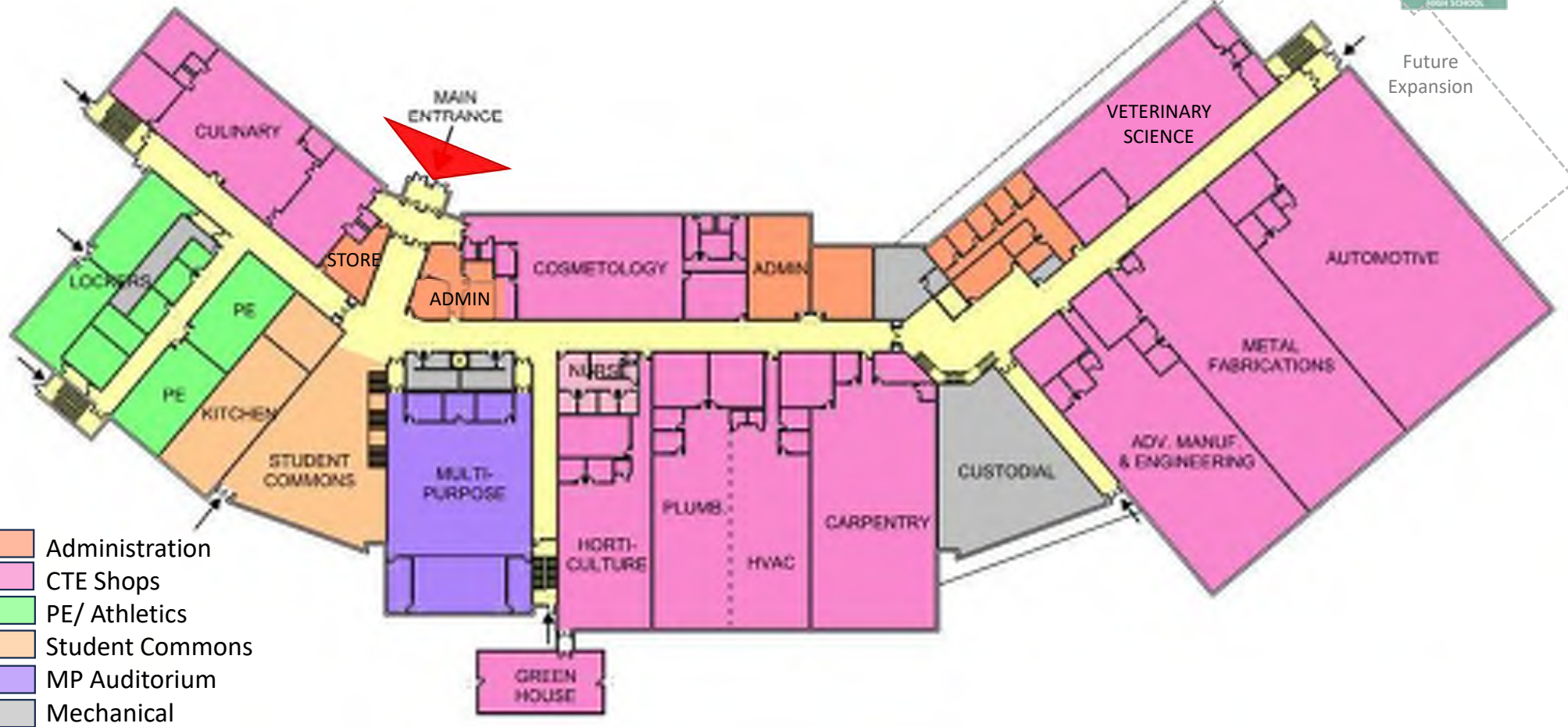
NC 2.0 900 students



Site Plan

*Note: This slide is animated; full Site Plan is below and displayed first, then enlarged Plan of first floor (above) is displayed.*

NC 2.0 900 students

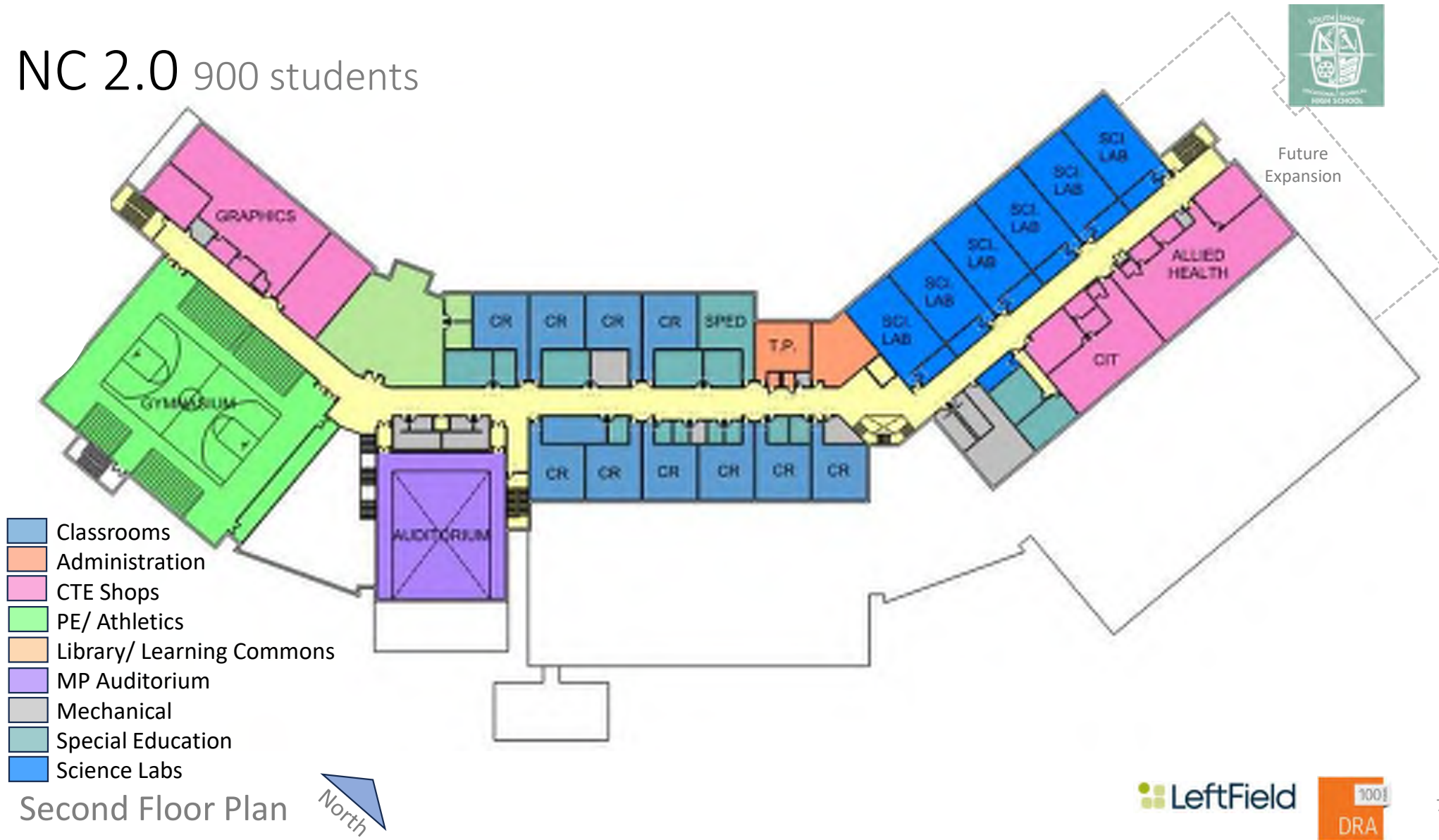


First Floor Plan





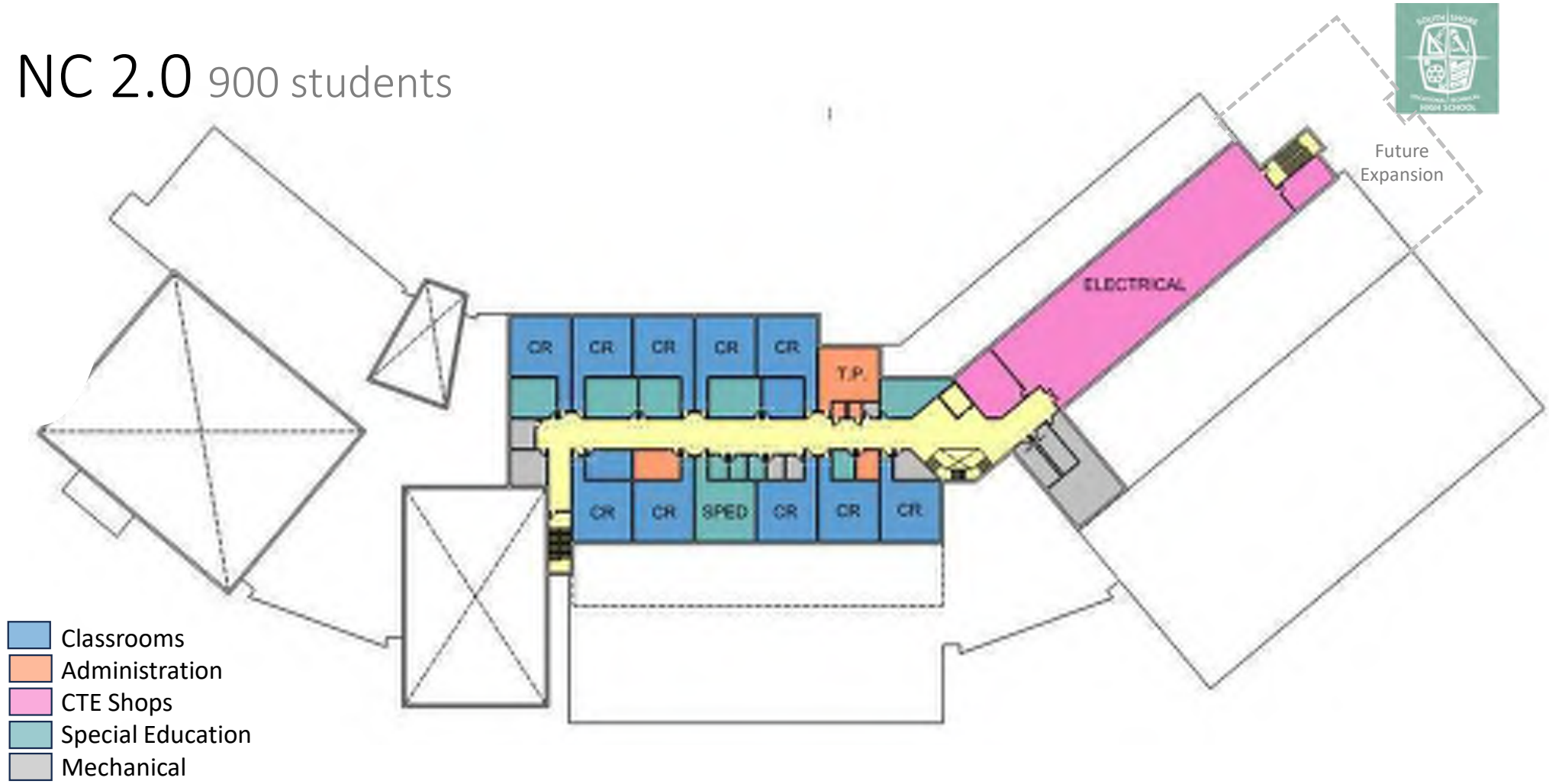
NC 2.0 900 students



- Classrooms
- Administration
- CTE Shops
- PE/ Athletics
- Library/ Learning Commons
- MP Auditorium
- Mechanical
- Special Education
- Science Labs

Second Floor Plan North

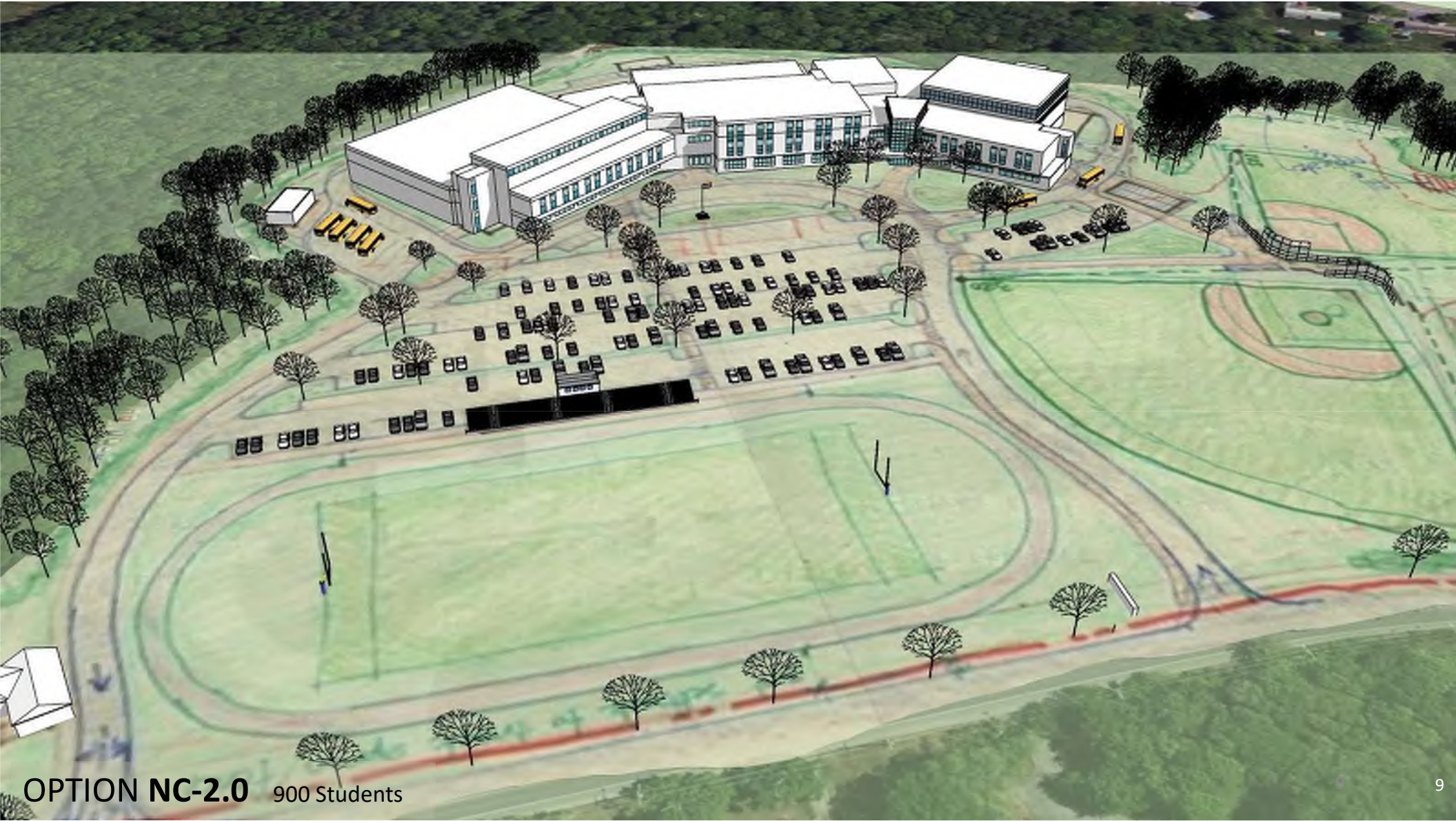
NC 2.0 900 students



Third Floor Plan

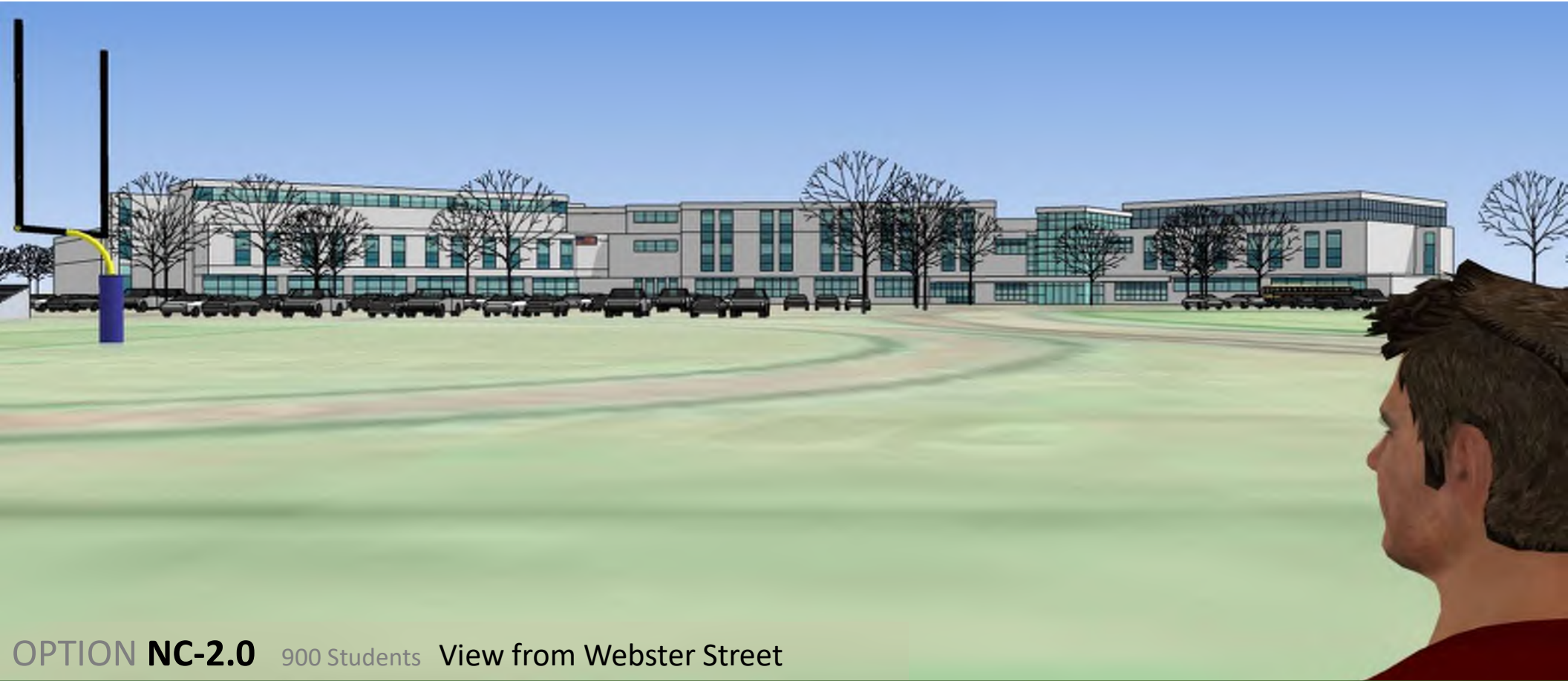






**OPTION NC-2.0** 900 Students





OPTION **NC-2.0** 900 Students View from Webster Street

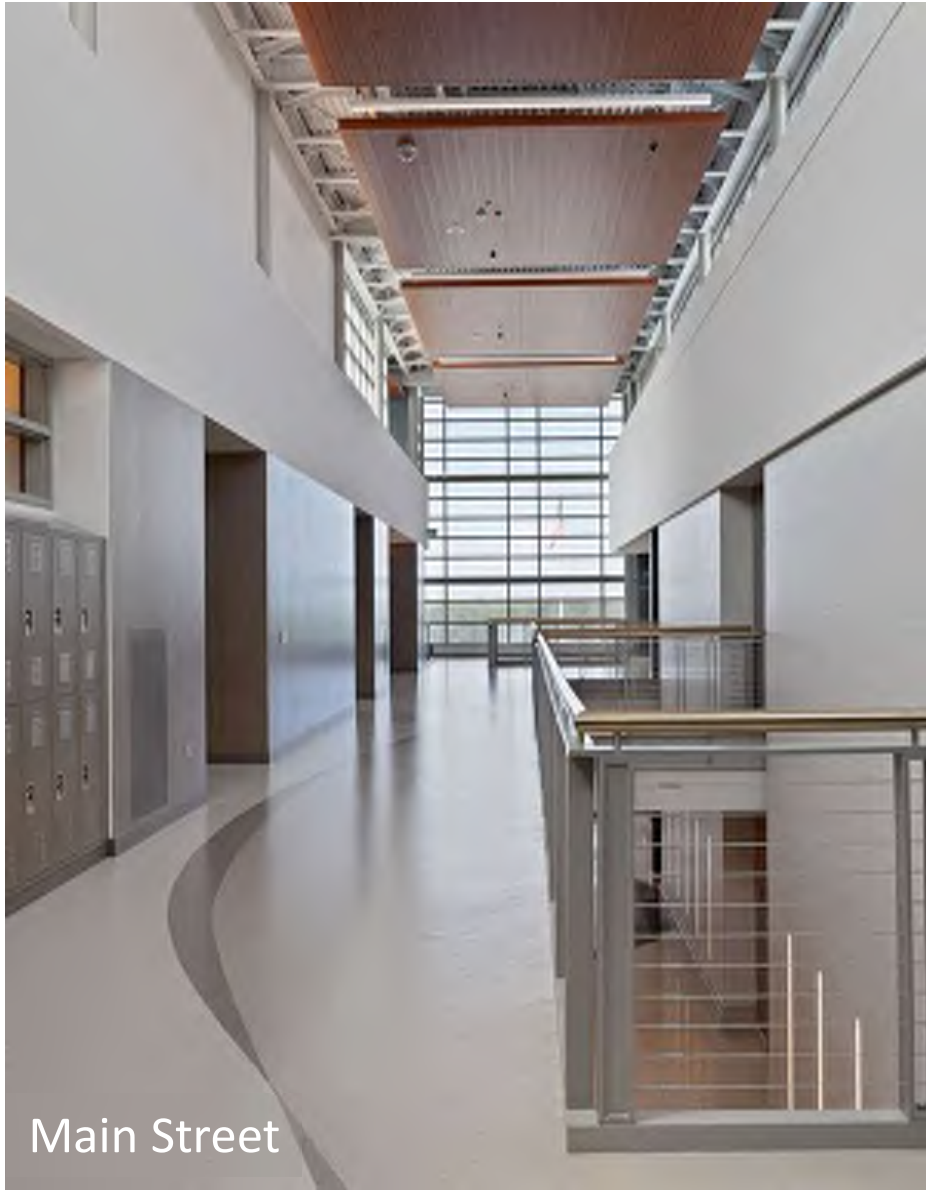






Multi-purpose Auditorium Concept





Main Street











Student Commons



Breakout Areas









## Educational Goals supported by the Preferred Option

---

- Real world connections to **21<sup>st</sup> C skills**  *In process. CTE shop environments to be developed during Schematic Design phase. Improved community access for interactions with real world customers*
- Academic & Career Technical **Integration**  *Majority of academic classrooms are located across the corridor from CTE shops. Shared Teachers rooms*
- Classroom **Neighborhoods/** Career Clusters  *CTE programs are organized generally in accordance with MA Career Cluster frameworks*
- **Flexibility**, Multi-Purpose spaces  *Highlighted by Multi-Purpose Auditorium & Student Commons*
- **Community** Accessibility & Identity  *Dedicated, secure entrances proposed for public events and customers. New school image*
- **Sustainable**  *In process. At least LEED Silver proposed. Compact, energy-efficient footprint. Potential green roof.*
- **Cost-effective**  *Comparable costs and better value than other options*
- **Transparent** Process  *In process. Several community outreach meetings conducted; more planned. Additional teacher and staff reviews still to come.*

## Facility Goals supported by the Preferred Option

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- **Right-Sizing Shops**  *All CTE programs meet required Space Needs*
- **Adding Ch.74 Programs**  *Plumbing & Veterinary Science spaces created in conformance with Ch. 74 guidelines*
- **Collaborative, Break-out areas**  *Collaborative Break-out areas are located in close to Classrooms & shops on each level*
- **Small Group Rooms**  *Special Ed & Small Group Pullout Rooms proposed be adjacent to classrooms*
- **Customer access to public shops**  *Dedicated, secure Customer Entrance proposed*
- **Related Classrooms in each shop**  *Related Rooms in each shop, accessible from corridor and shop*
- **MP Auditorium/ Large Group space**  *Flexible, Multi-Purpose space proposed to support a variety of presentation & performance activities*
- **Locker Room parity; Gender Neutral accommodations**  *Comparable facilities proposed. Options to be considered during Schematic Design phase*



## Preliminary Pricing Table

Option (Description)	Total Gross Square Feet	Square Feet of Renovated Space (\$/SF)	Square Feet of New Construction (\$/SF)	One, Building Takedown, Haz Mat Etc. (\$)	Estimated Total Construction** (\$')	Estimated Total Project Costs (\$)
Base Building Repair Option (Code Upgrade Only)	121,805 sf	121,805 sf \$ 556.06 \$/sf	- sf \$ - \$/sf	\$ 13,502,914	\$ 81,233,802 \$ 666.92 \$/sf	\$ 109,665,633
AR-1 805 (Add/Reno, L-Shape, 805 Enrollment)	235,310 sf	112,100 sf \$ 699.49 \$/sf	123,210 sf \$ 668.27 \$/sf	\$ 44,485,643	\$ 205,236,019 \$ 872.19 \$/sf	\$ 277,825,034
AR-1 900 (Add/Reno, L-Shape, 900 Enrollment)	253,990 sf	112,100 sf \$ 701.33 \$/sf	141,890 sf \$ 670.11 \$/sf	\$ 43,011,215	\$ 216,712,216 \$ 853.23 \$/sf	\$ 293,492,782
AR-2 645 (Add/Reno, Lightwell, 645 Enrollment)	188,100 sf	115,000 sf \$ 745.64 \$/sf	73,100 sf \$ 715.21 \$/sf	\$ 33,995,863	\$ 172,026,314 \$ 914.55 \$/sf	\$ 224,157,893
NC-1 750 (New Construction, Courtyard, 750 Enrollment)	228,540 sf	- sf \$ - \$/sf	228,540 sf \$ 755.00 \$/sf	\$ 41,016,074	\$ 213,563,774 \$ 934.47 \$/sf	\$ 266,954,717
NC-2.0 805 (New Construction, Linear Left, 805 Enrollment)	237,175 sf	- sf \$ - \$/sf	237,175 sf \$ 743.84 \$/sf	\$ 41,936,341	\$ 218,356,593 \$ 920.66 \$/sf	\$ 273,966,709
NC-2.0 900 *** (New Construction, Linear Left, 900 Enrollment)	256,350 sf	- sf \$ - \$/sf	256,350 sf \$ 717.83 \$/sf	\$ 41,758,114	\$ 225,773,834 \$ 880.72 \$/sf	\$ 283,595,433
NC-2.1 805 (New Construction, Linear Center, 805 Enrollment)	240,360 sf	- sf \$ - \$/sf	240,360 sf \$ 762.14 \$/sf	\$ 41,758,761	\$ 224,946,731 \$ 935.87 \$/sf	\$ 281,841,924
NC-2.1 900 (New Construction, Linear Center, 900 Enrollment)	250,520 sf	- sf \$ - \$/sf	250,520 sf \$ 736.49 \$/sf	\$ 41,759,117	\$ 232,893,002 \$ 897.40 \$/sf	\$ 292,102,837
NC-3 975 (New Construction, Wing, 975 Enrollment)	278,000 sf	- sf \$ - \$/sf	278,000 sf \$ 721.76 \$/sf	\$ 43,837,820	\$ 244,487,100 \$ 879.45 \$/sf	\$ 305,608,875