

# 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

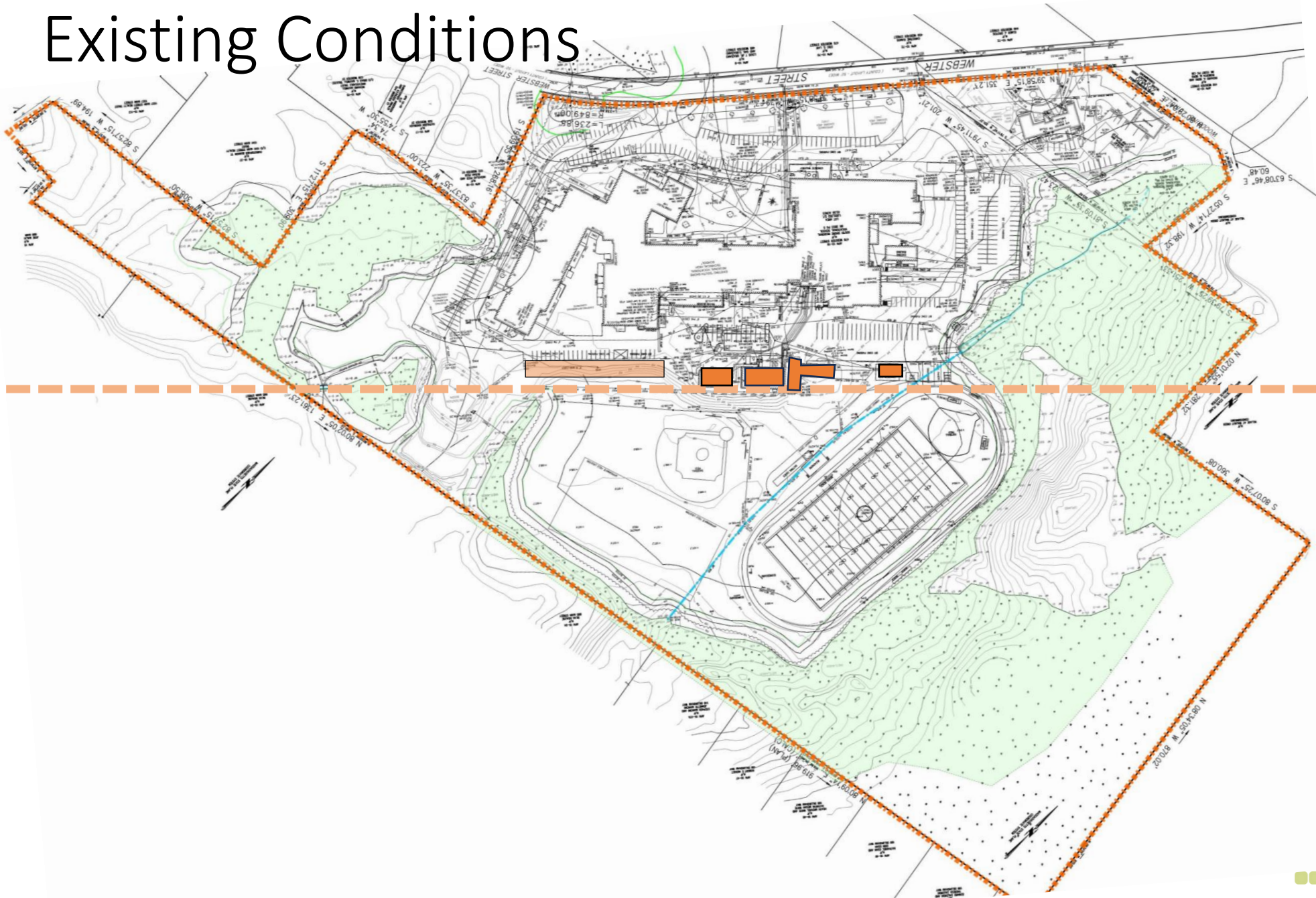
## Site Development Requirements

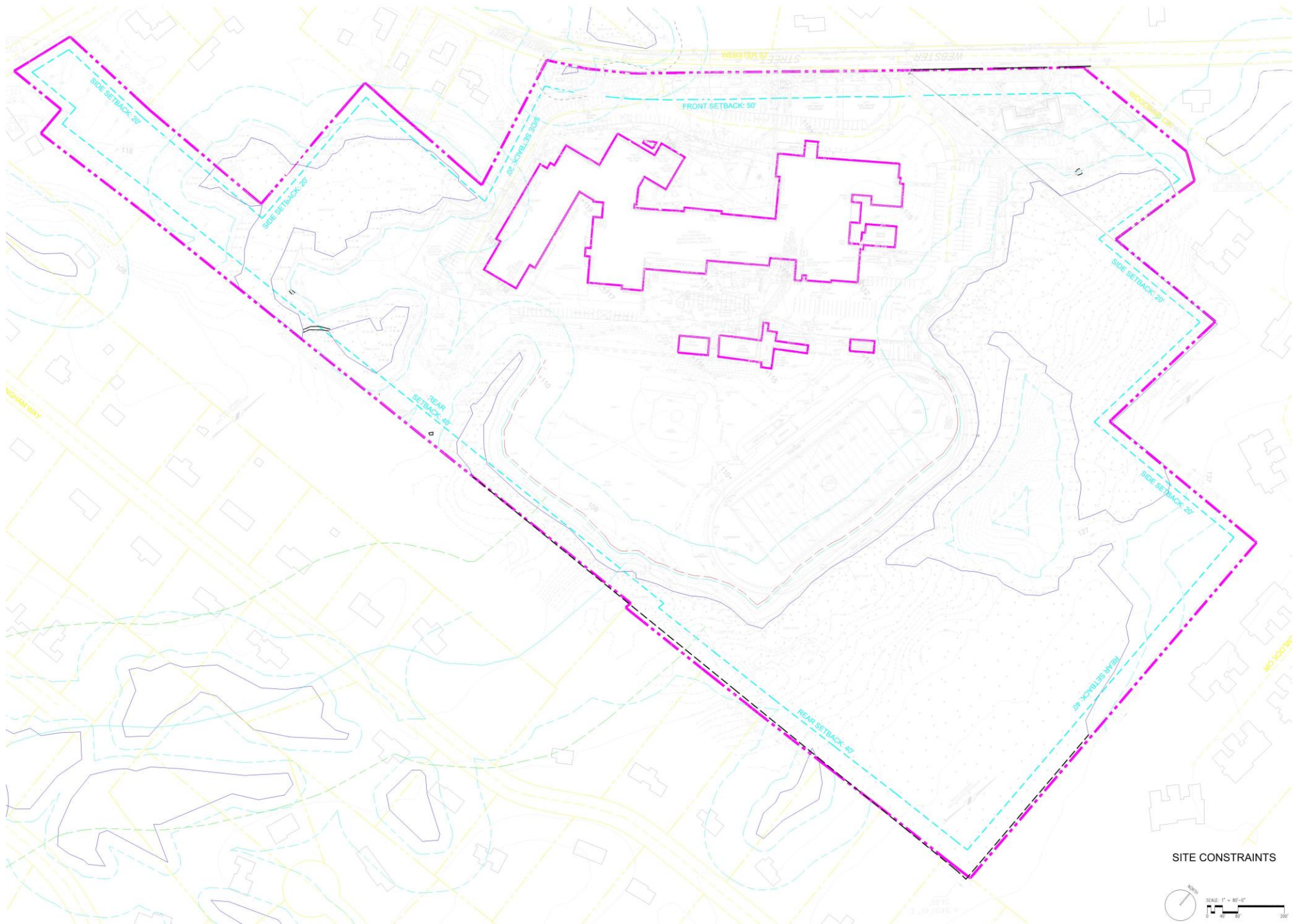
### Key issues

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

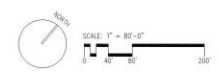
Enrollments:	existing	805	900
Staff: (Admin & Teachers):	130	160	175
Approx. 2/3 of seniors:	108	134	150
Approx. 1/3 of juniors:	53	66	74
Visitors:	20	24	27
<b>TOTAL Parking Spaces:</b>	<b>311</b>	<b>384</b>	<b>426</b>
<i>Bus parking (one bus = 4 cars)</i>	<i>12</i>	<i>15</i>	<i>17</i>

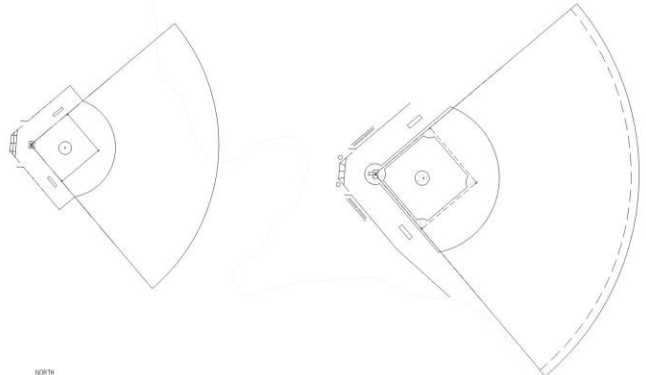
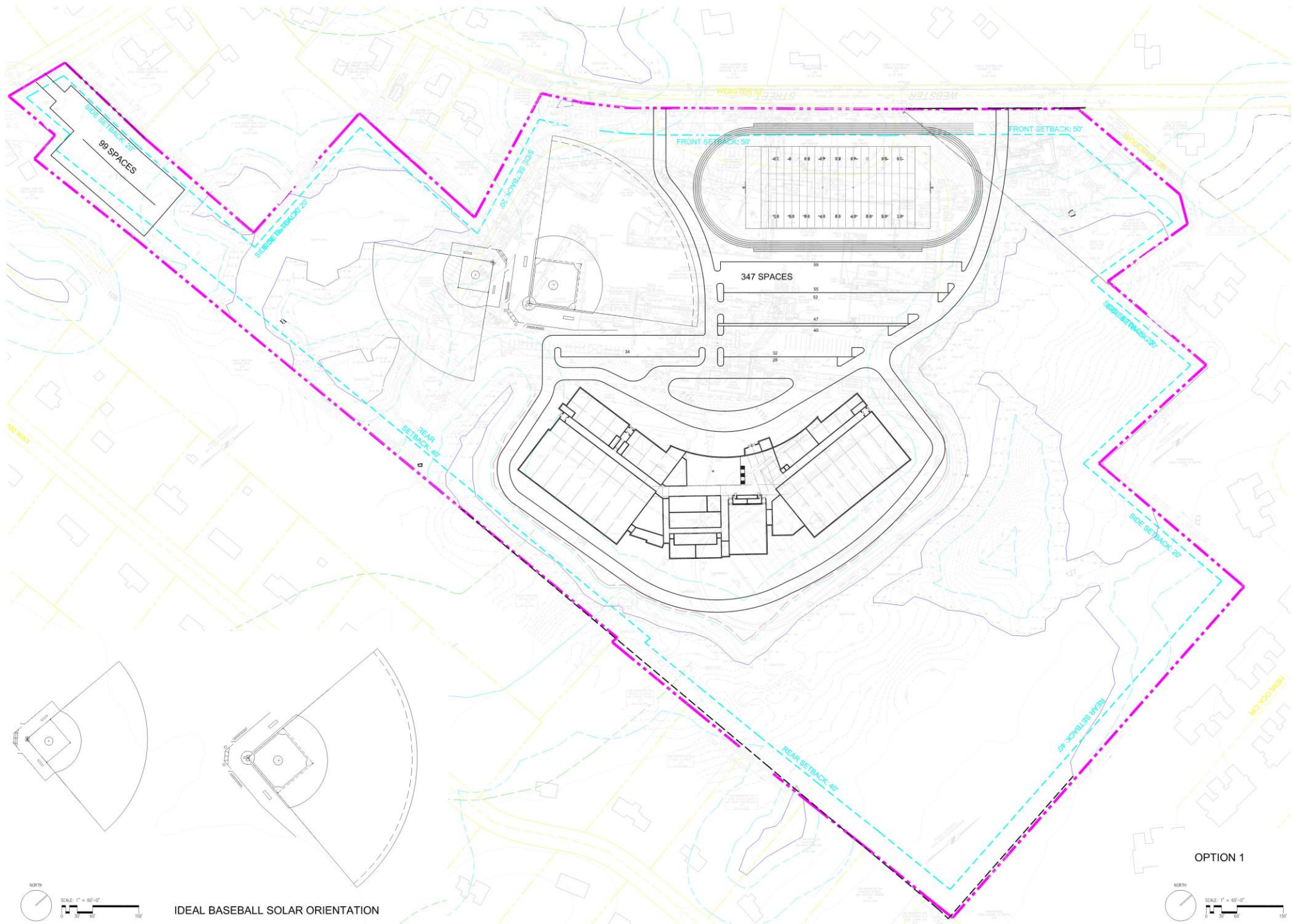
# Existing Conditions



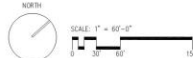


SITE CONSTRAINTS

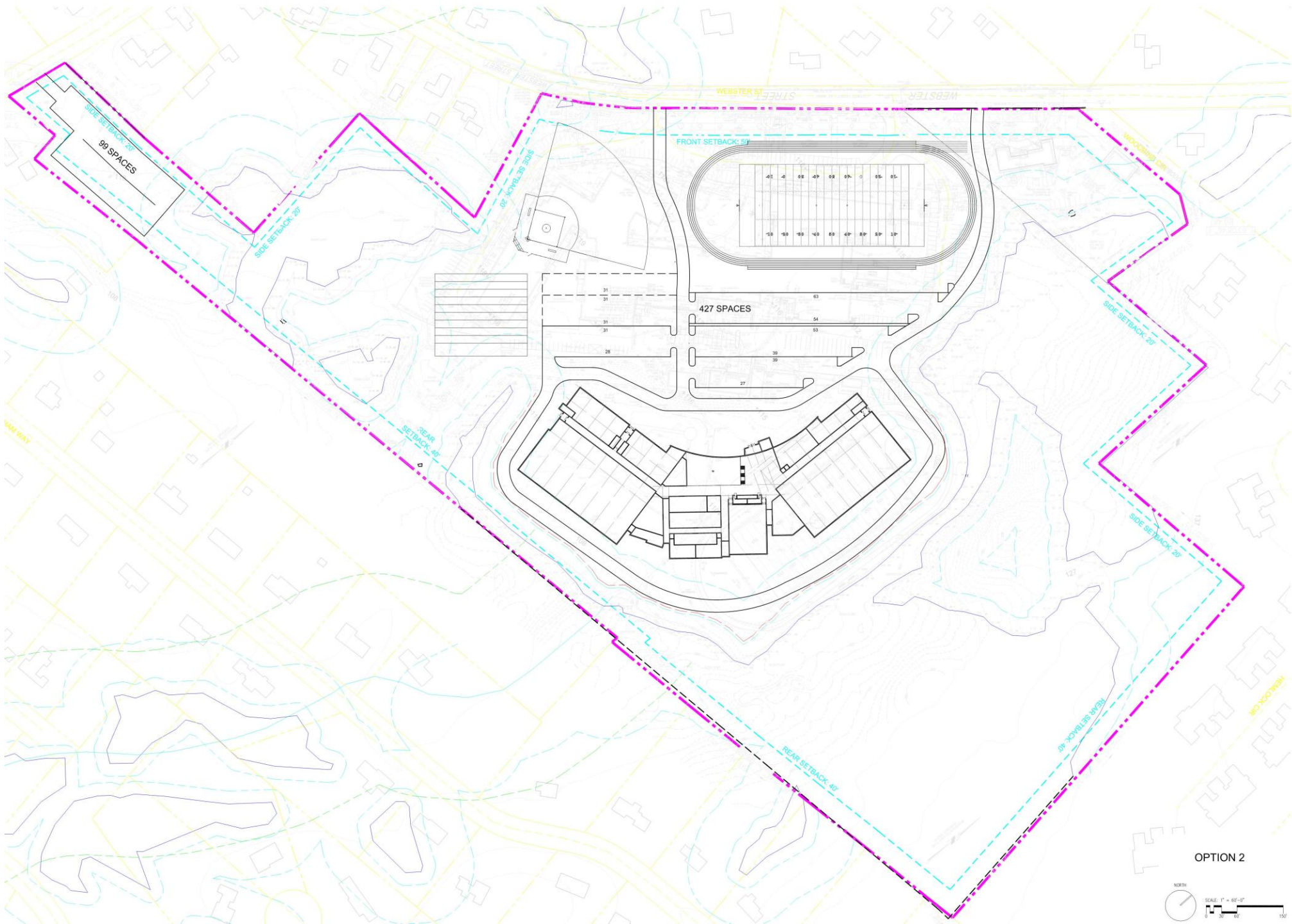




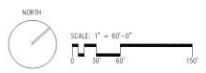
IDEAL BASEBALL SOLAR ORIENTATION



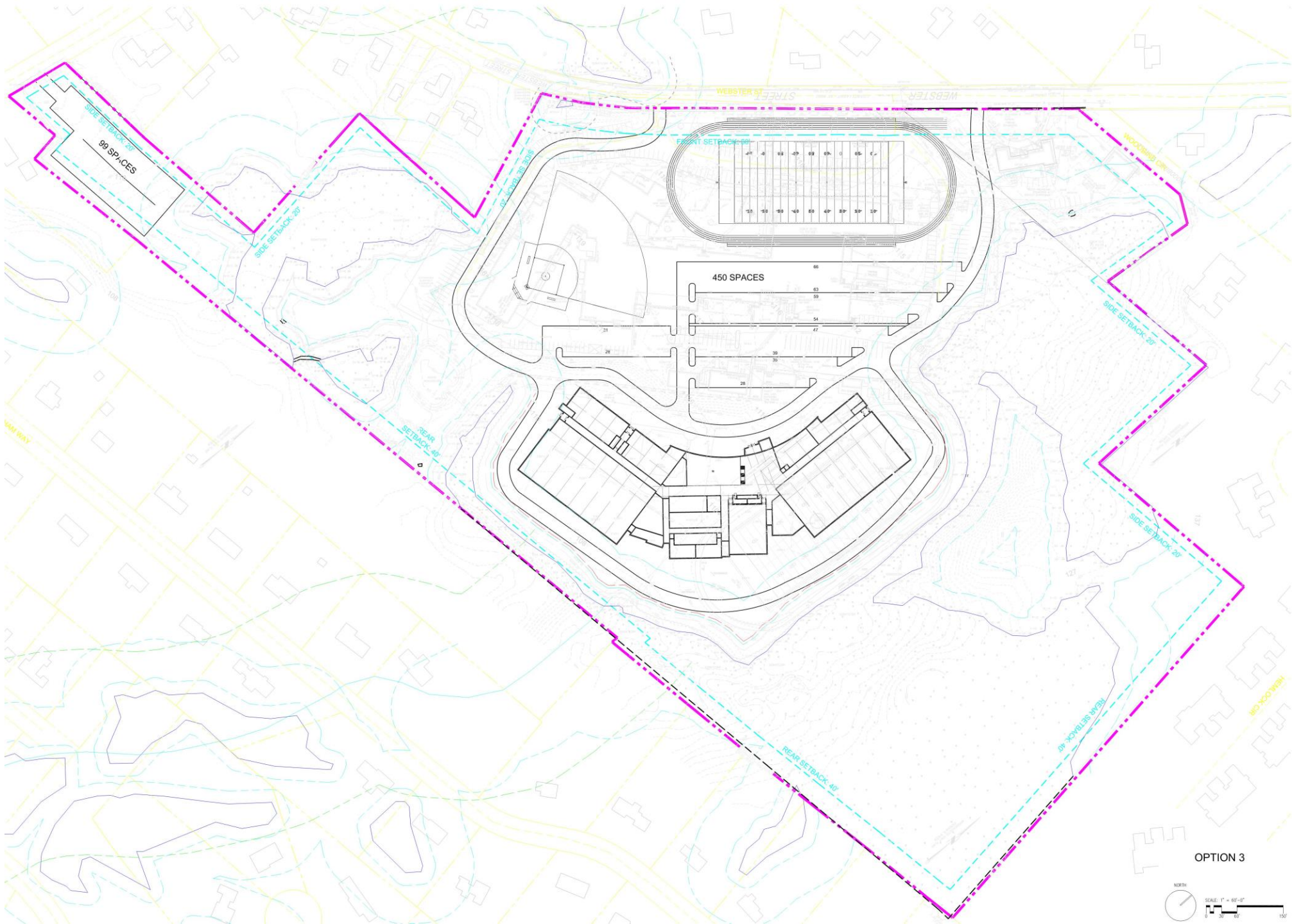
OPTION 1



OPTION 2







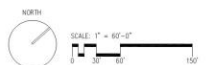
99 SPACES

FRONT SETBACK 30'

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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450 SPACES

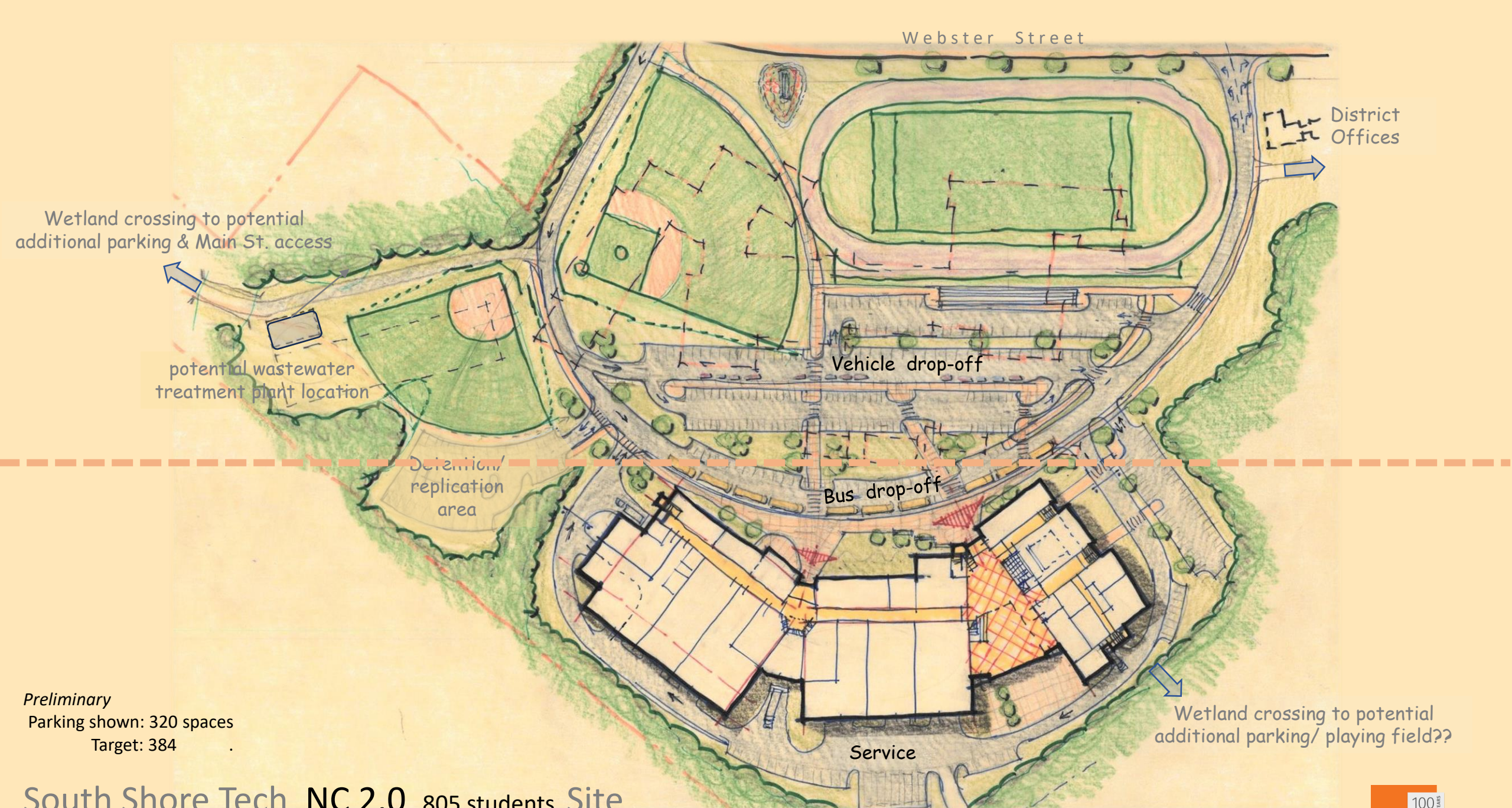
OPTION 3



# Preliminary Options

## New Construction Options

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



Webster Street

District Offices

Wetland crossing to potential additional parking & Main St. access

potential wastewater treatment plant location

Retention/replication area

Vehicle drop-off

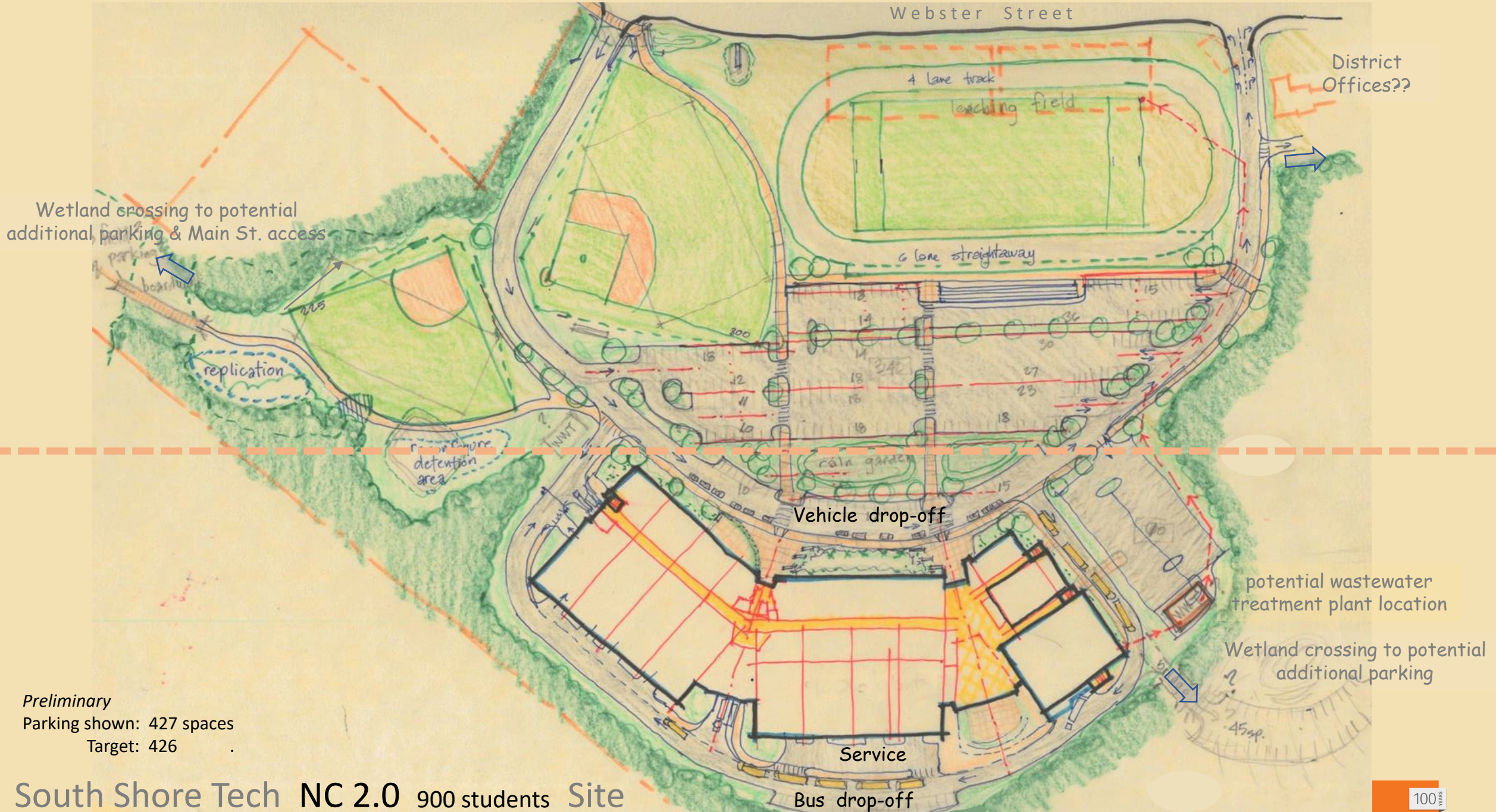
Bus drop-off

Service

Wetland crossing to potential additional parking/ playing field??

Preliminary  
 Parking shown: 320 spaces  
 Target: 384

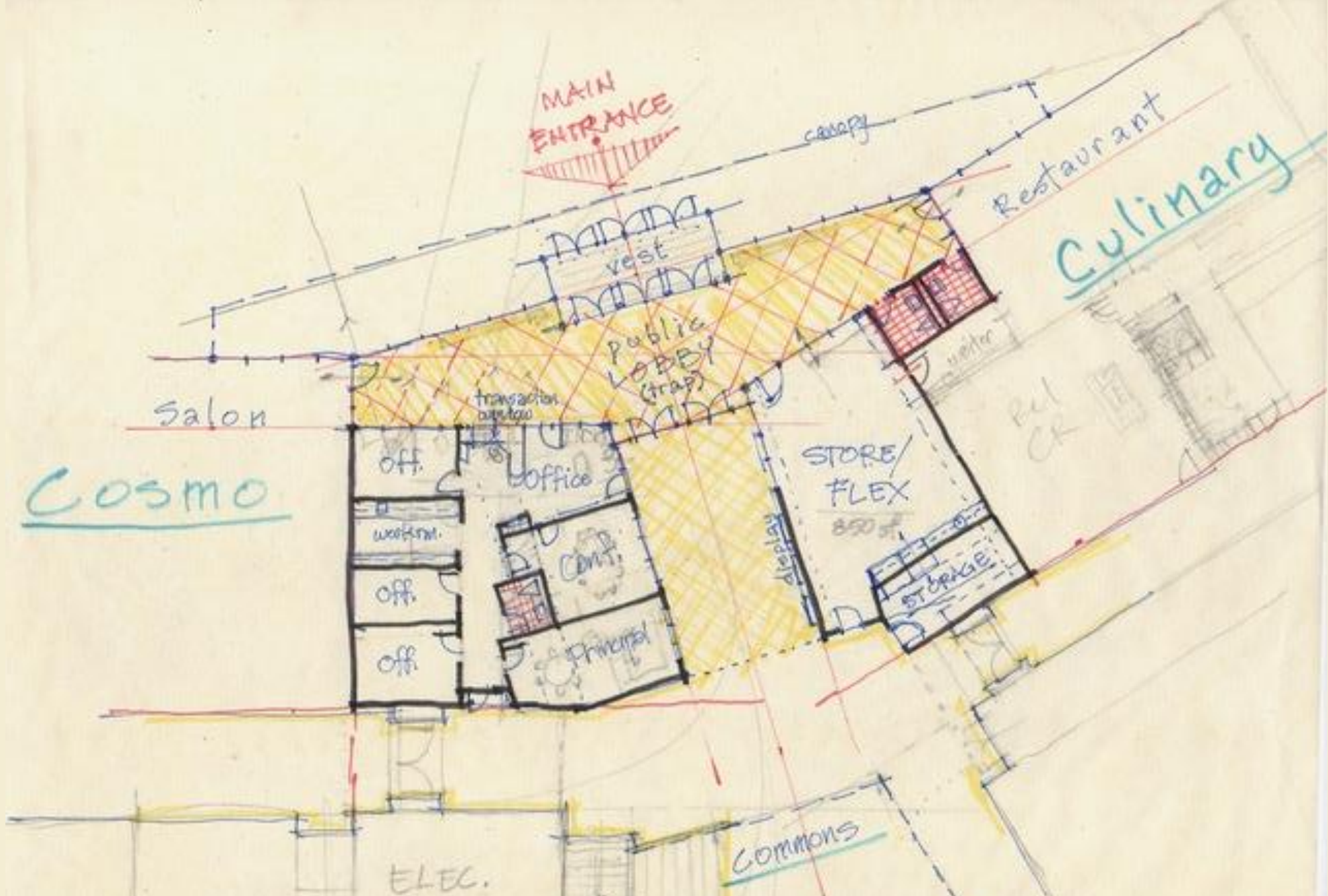
South Shore Tech NC 2.0 805 students Site



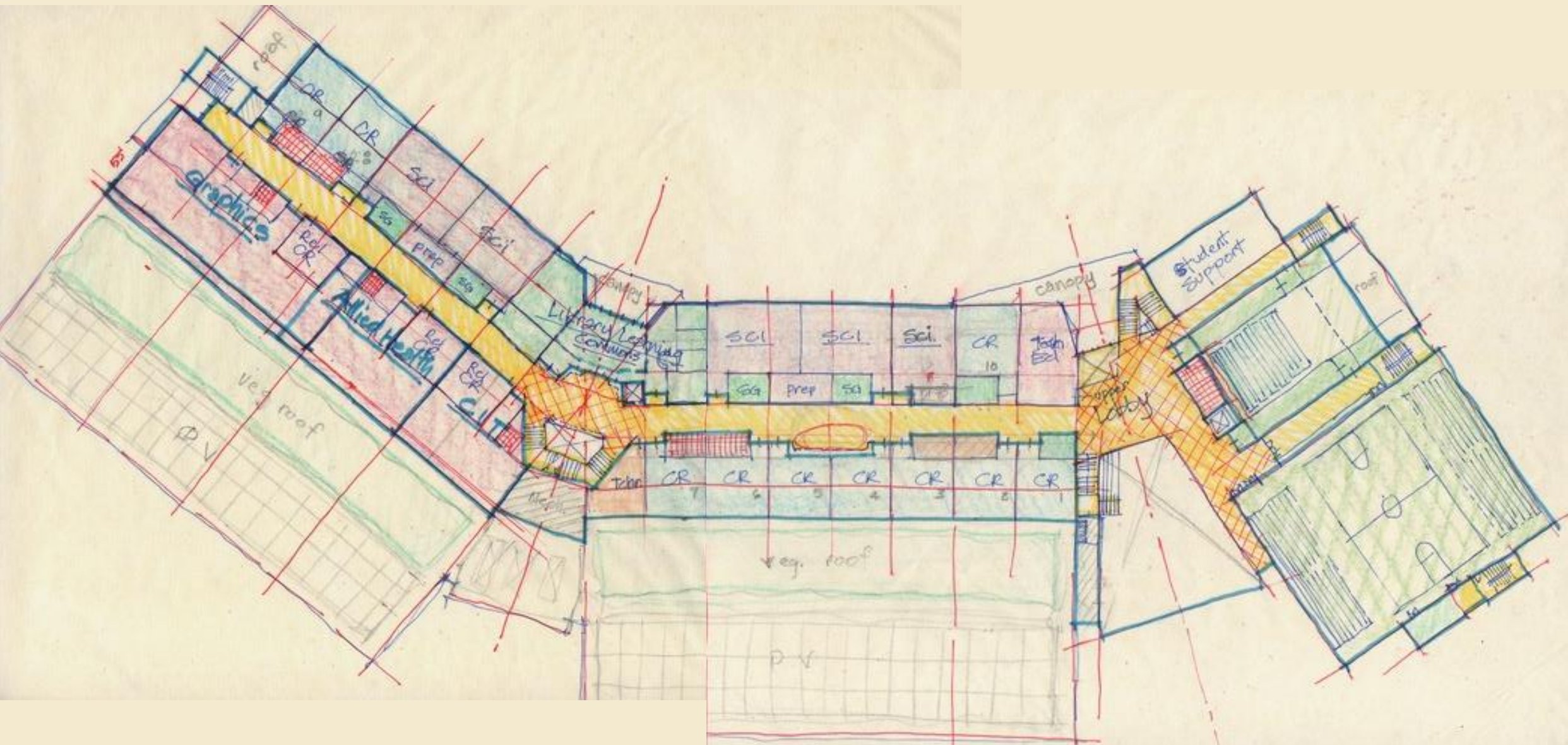
Preliminary  
 Parking shown: 427 spaces  
 Target: 426

South Shore Tech NC 2.0 900 students Site

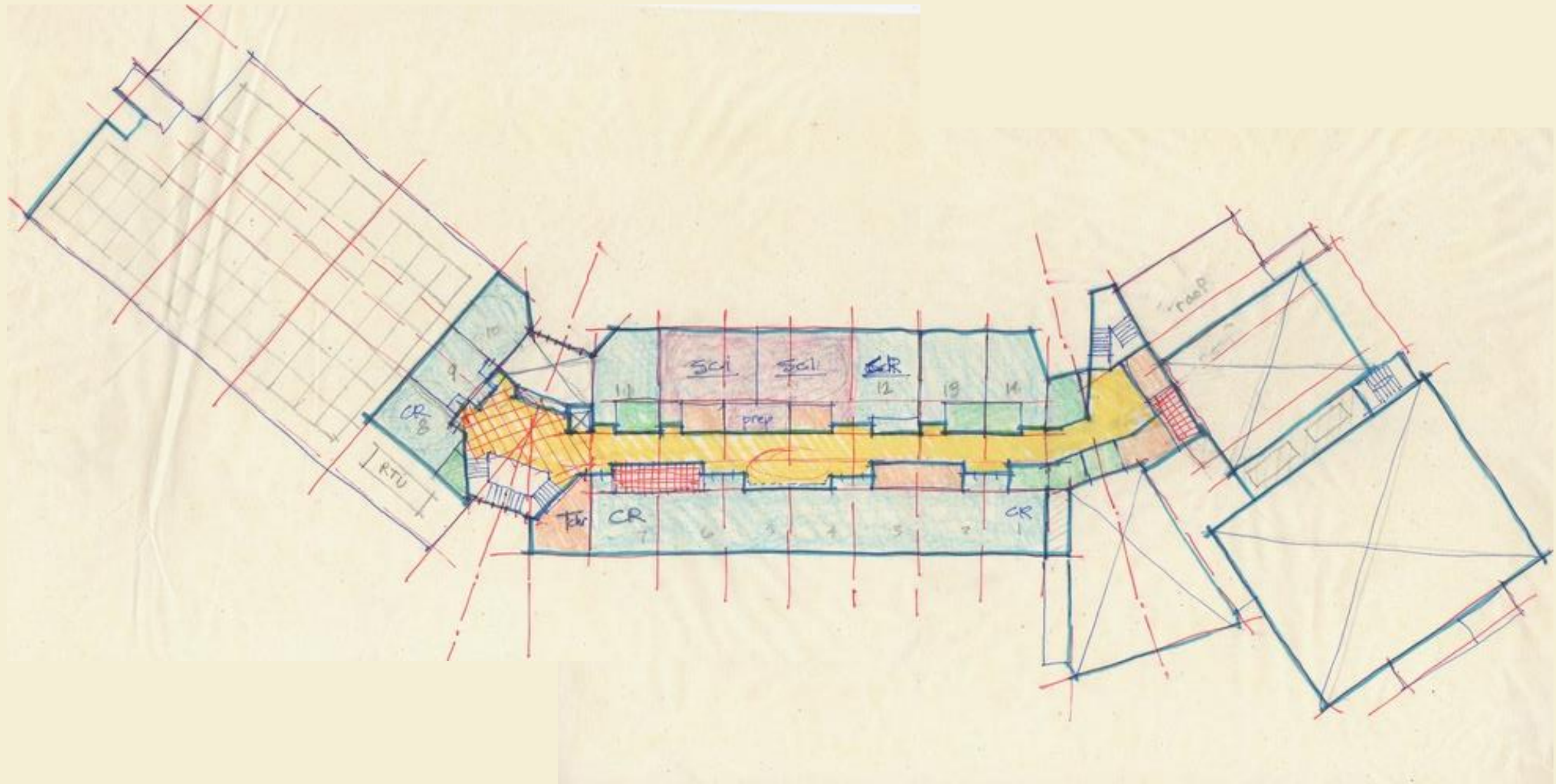




South Shore Tech OPTION NC-2.0 Single Secure Entrance

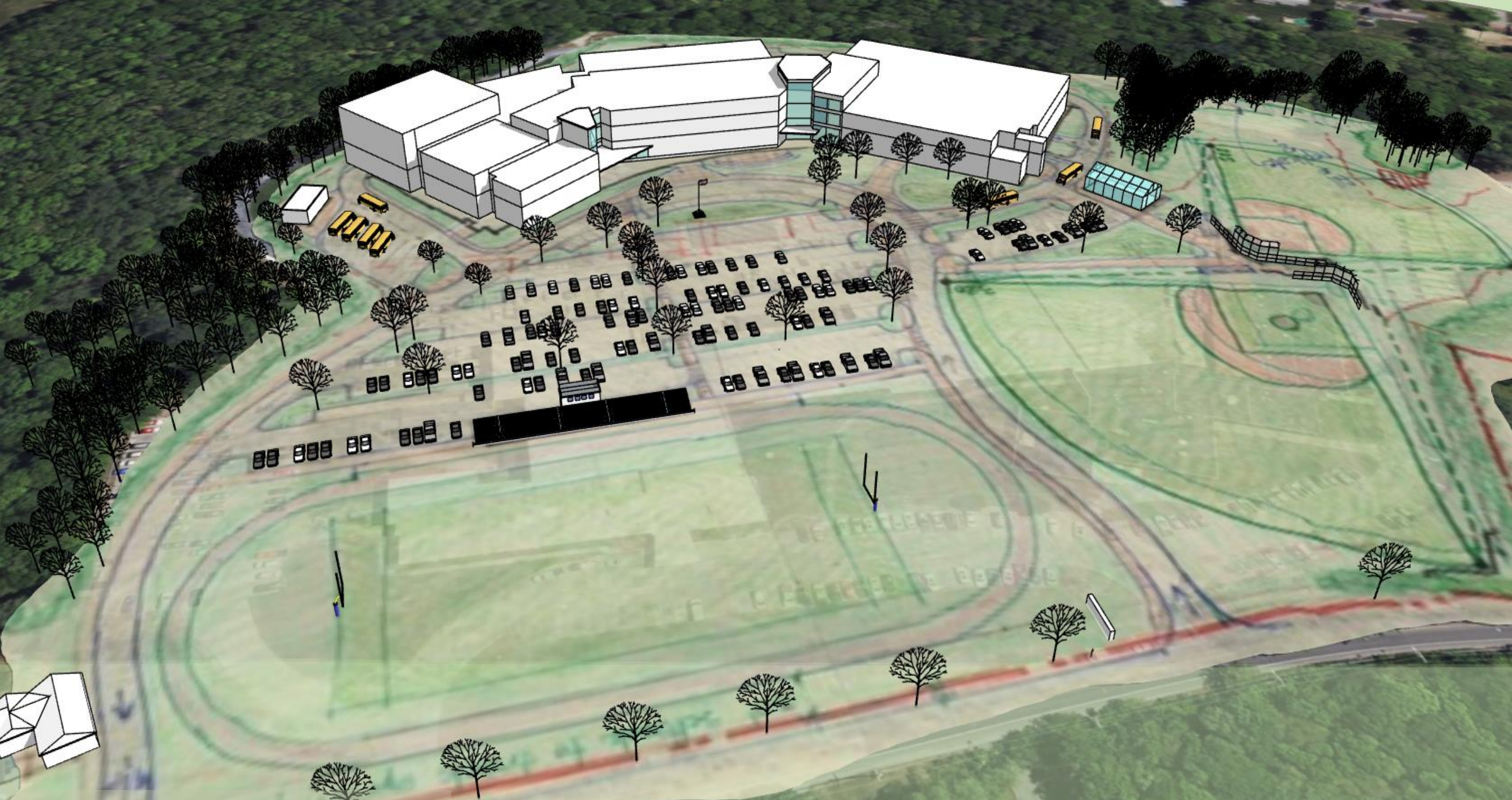


South Shore Tech **OPTION NC-2.0** 900 Students 2<sup>nd</sup> Floor



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

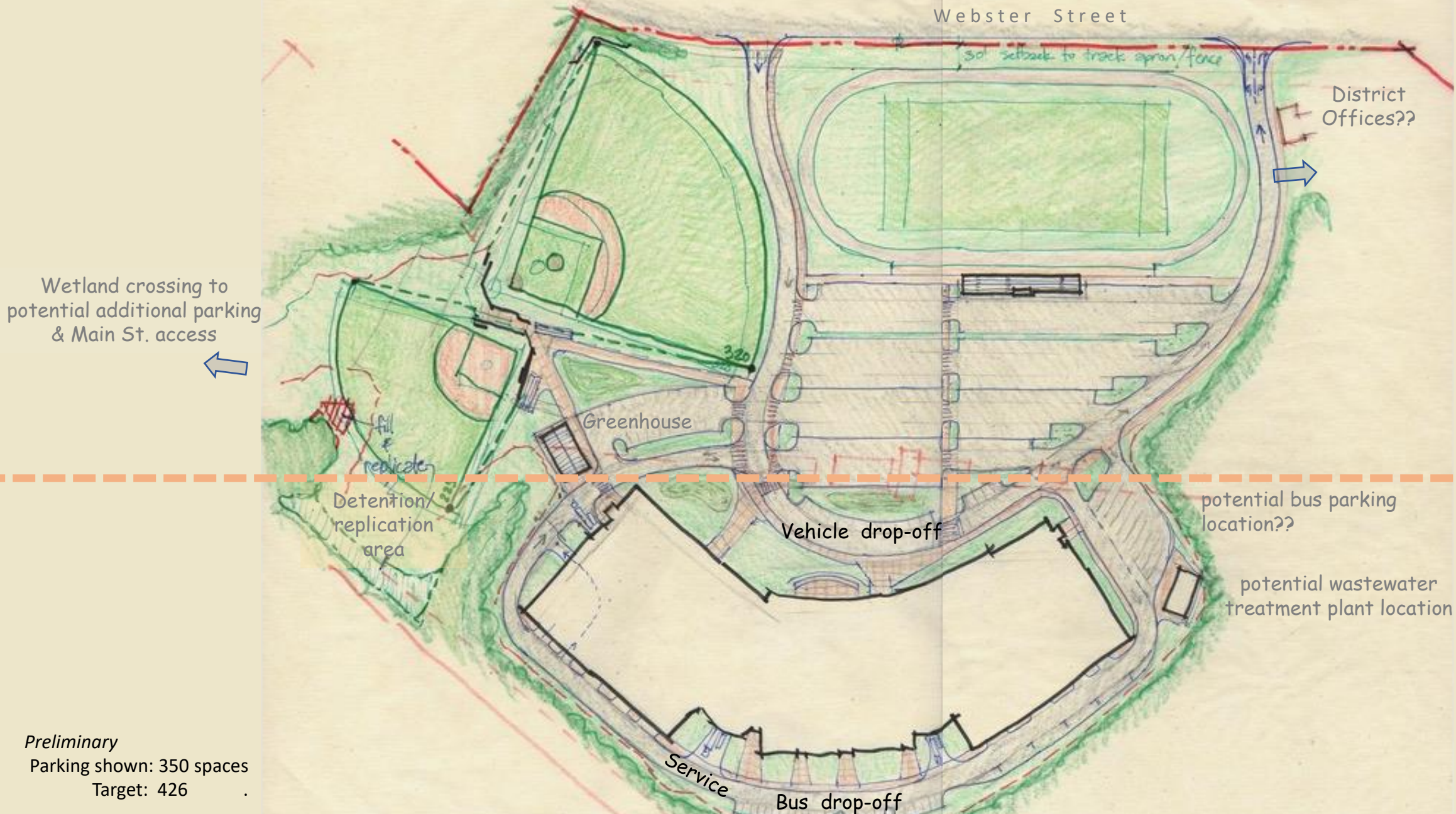




**OPTION NC-2.0** 900 Students



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



Wetland crossing to potential additional parking & Main St. access



30' setback to track apron/fence

District Offices??



fill & replicate

Detention/replication area

Greenhouse

Vehicle drop-off

potential bus parking location??

potential wastewater treatment plant location

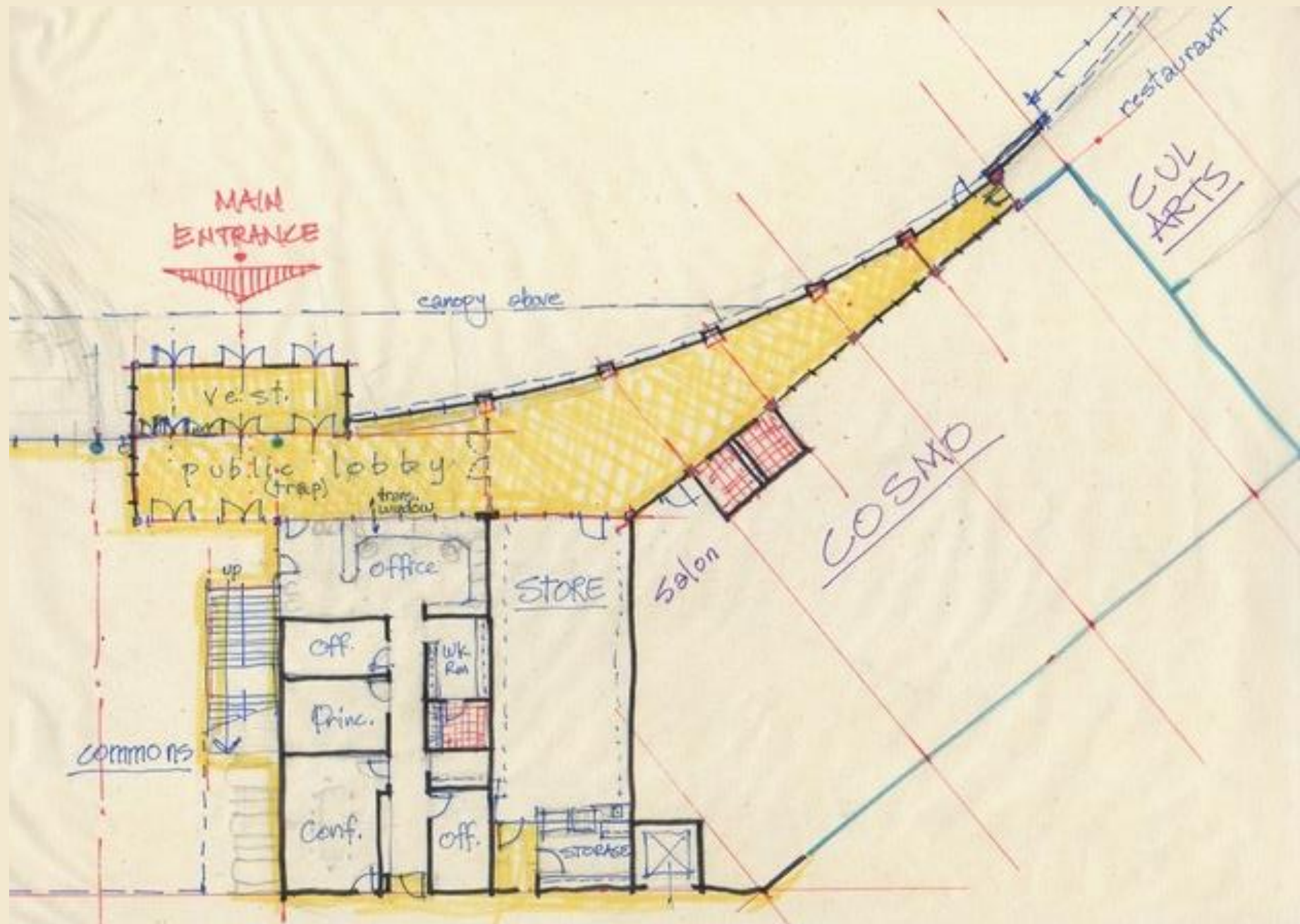
Preliminary  
 Parking shown: 350 spaces  
 Target: 426

Service

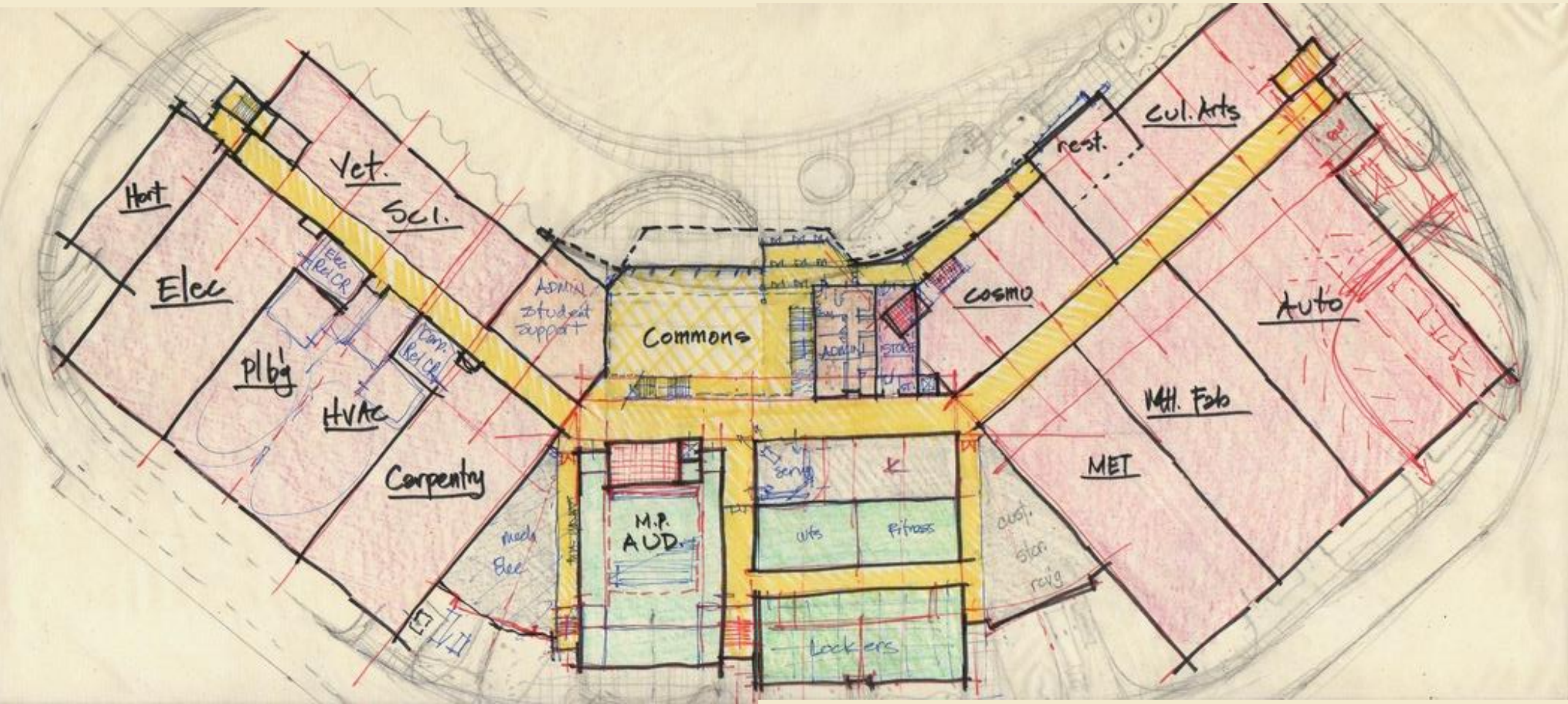
Bus drop-off

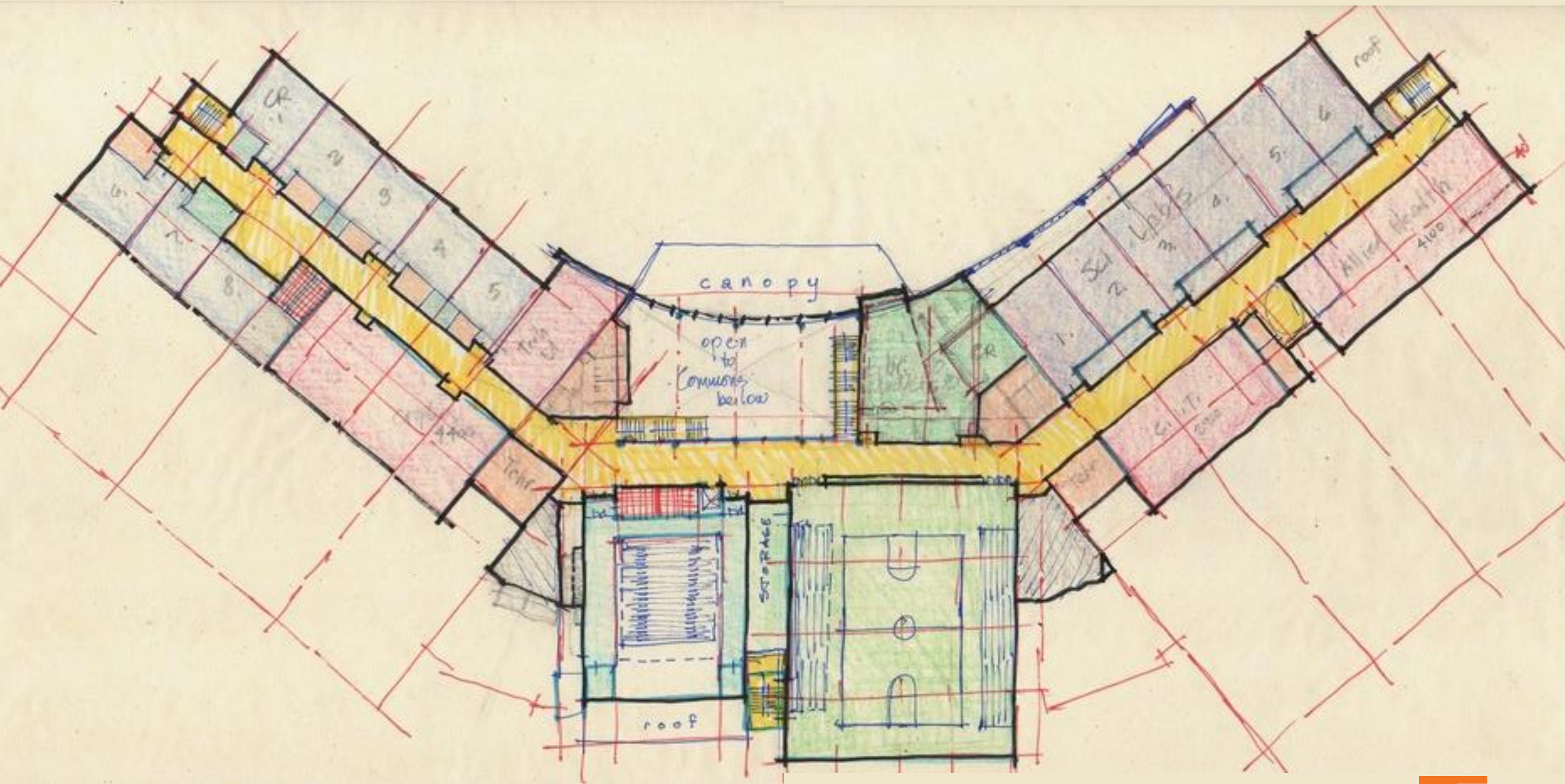
South Shore Tech NC 2.1 900 students Site



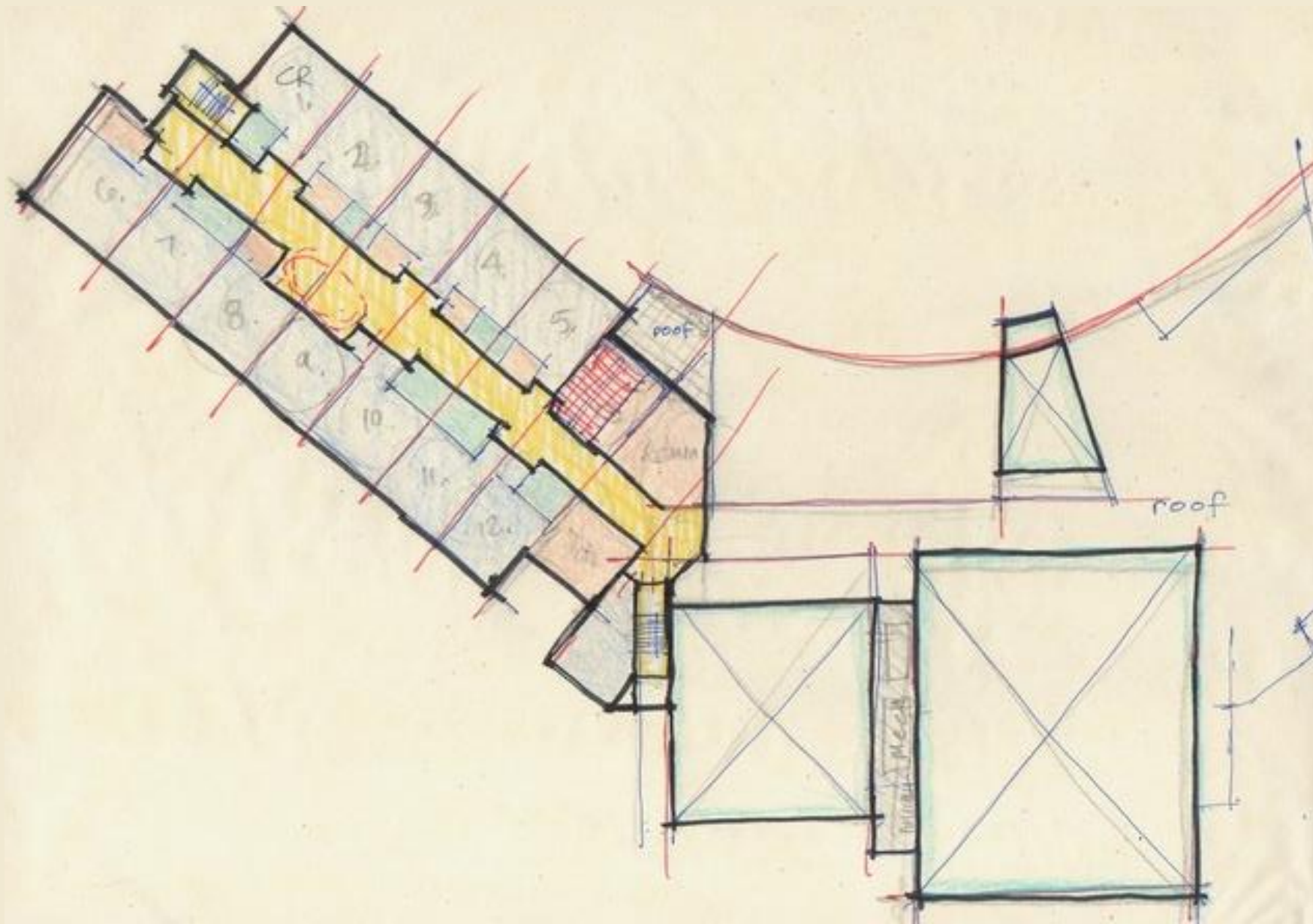


South Shore Tech OPTION **NC-2.1** Single Secure Entrance



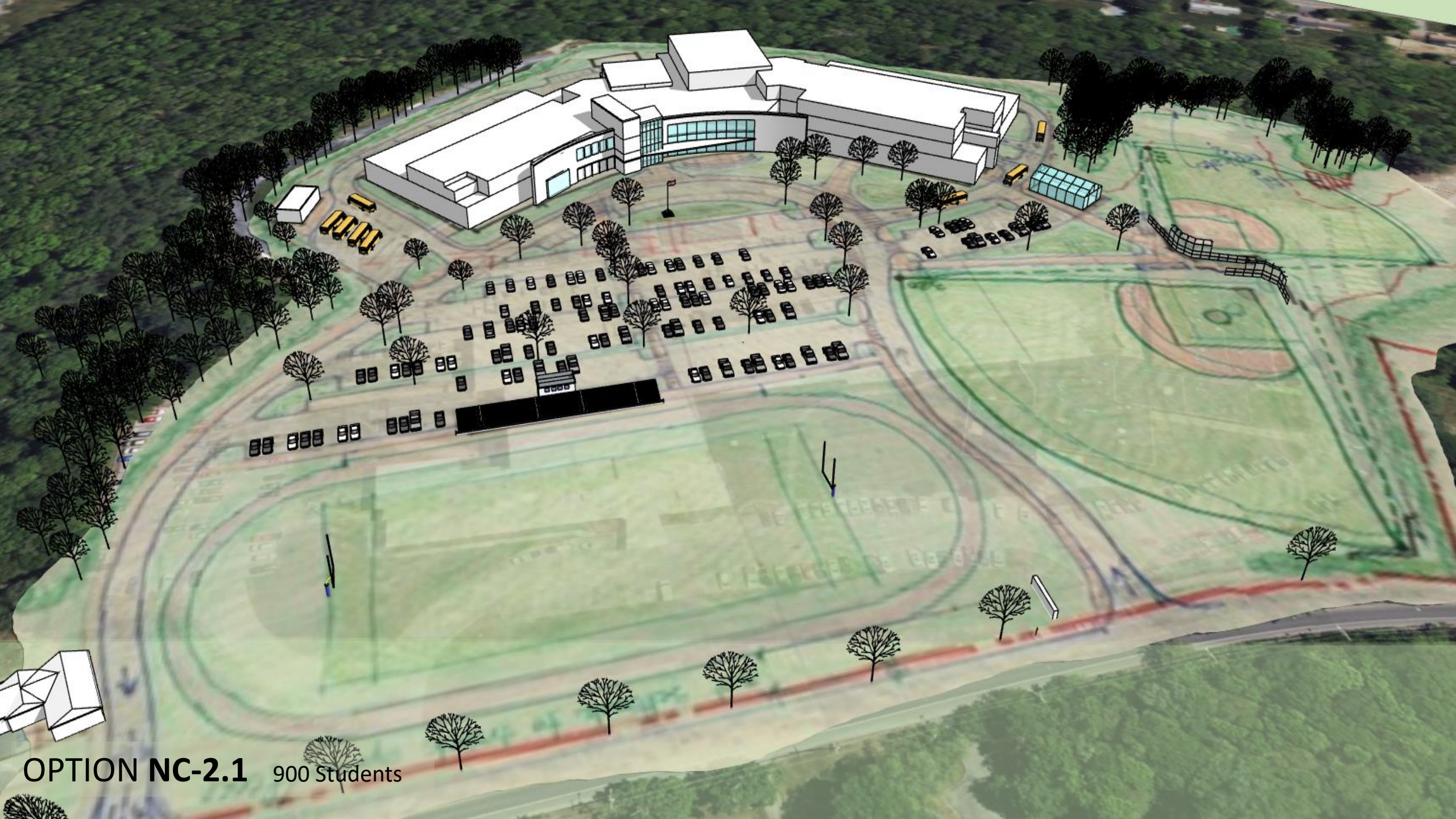


South Shore Tech OPTION **NC-2.1** 900 Students 2<sup>nd</sup> Floor



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

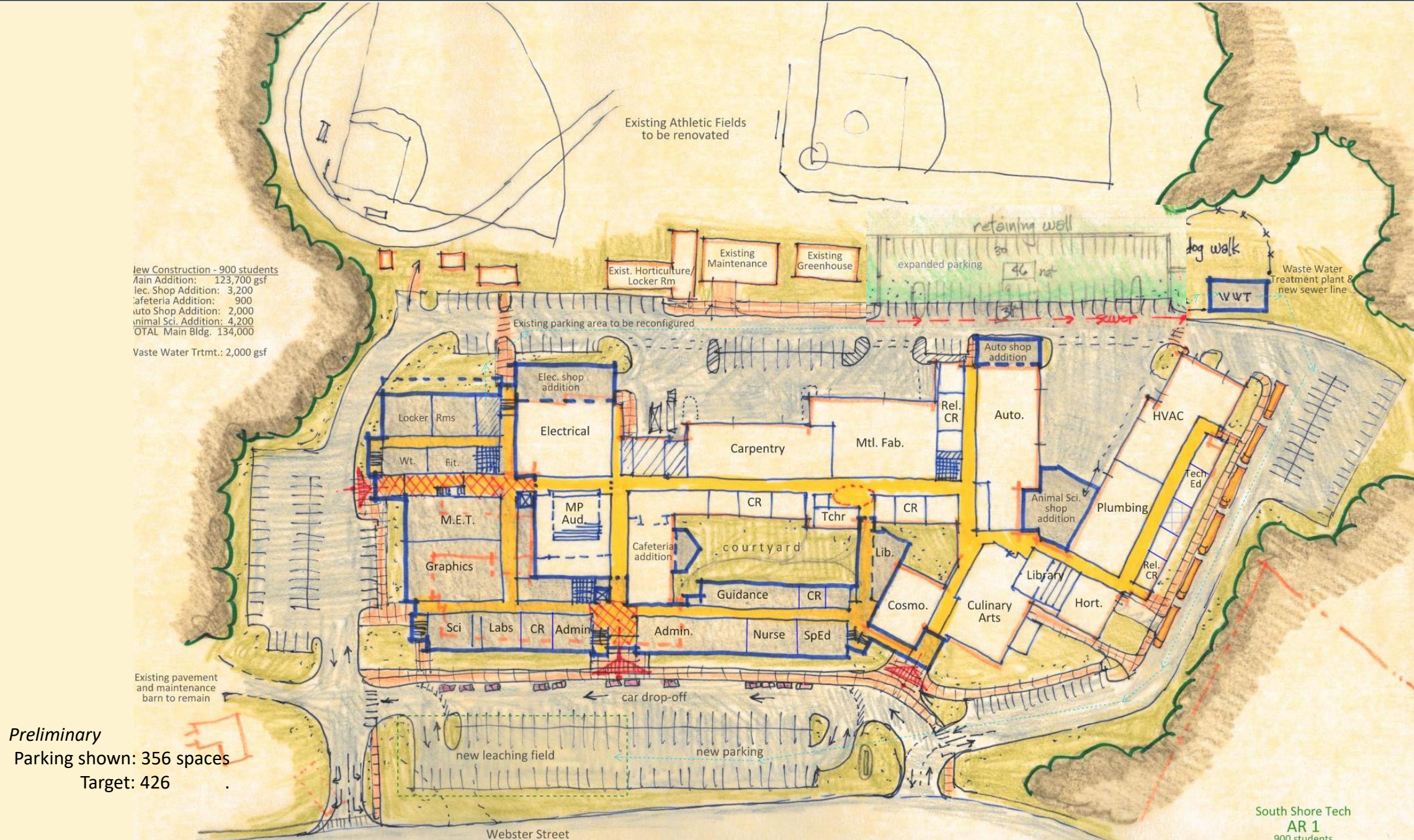


## Addition / Renovation Options

- AR-1 “L-Shaped”



Addition/Renovation Option



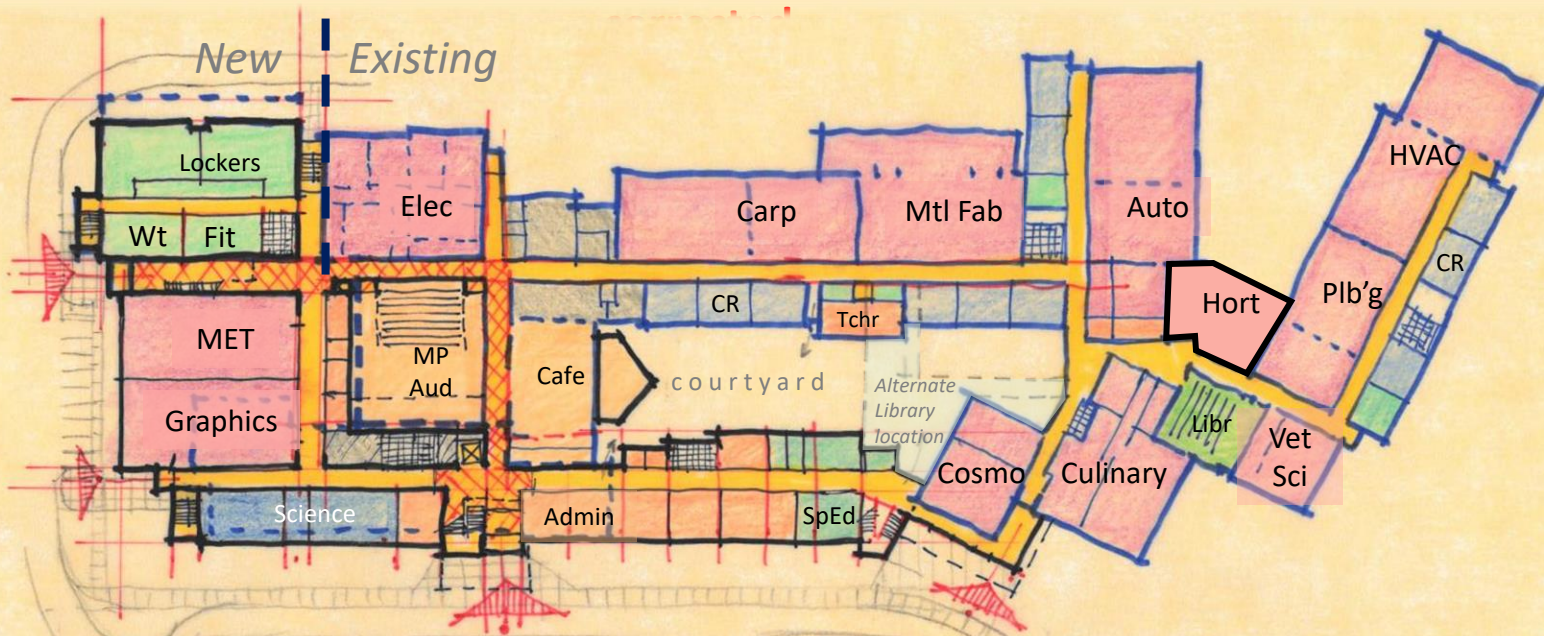
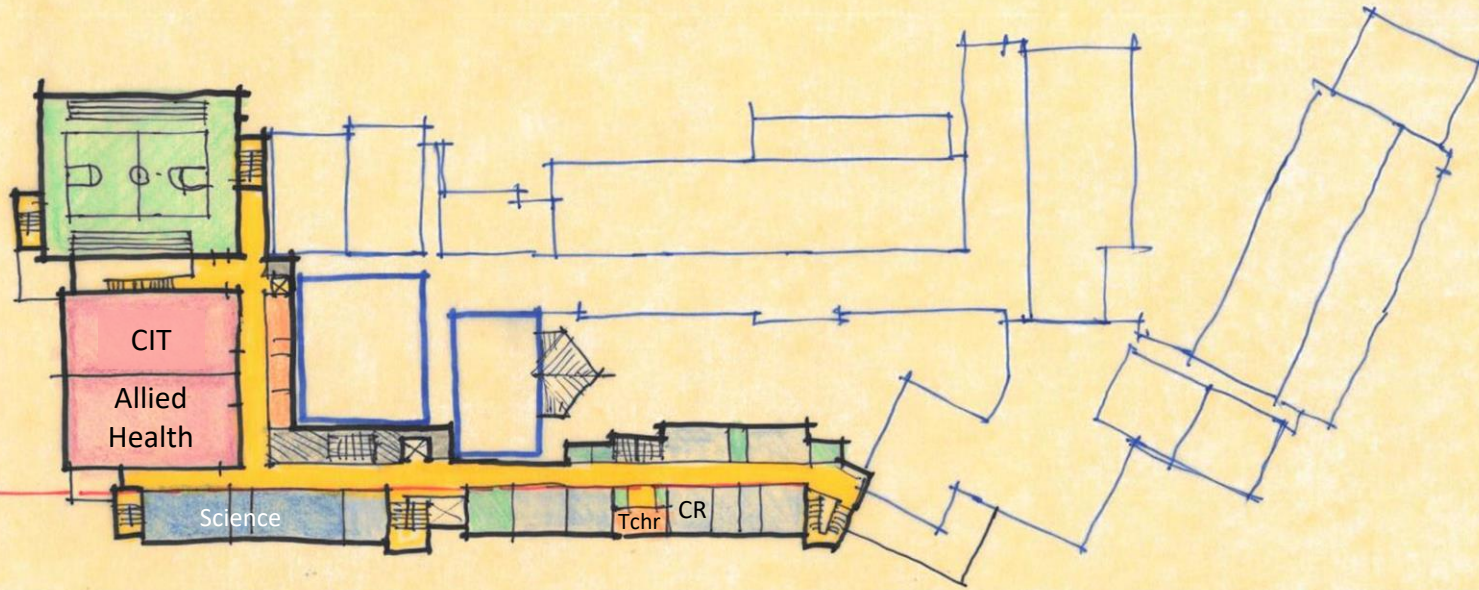
New Construction - 900 students  
 Main Addition: 123,700 gsf  
 Elec. Shop Addition: 3,200  
 Cafeteria Addition: 900  
 Auto Shop Addition: 2,000  
 Animal Sci. Addition: 4,200  
 TOTAL Main Bldg.: 134,000  
 Waste Water Trtmt.: 2,000 gsf

Preliminary  
 Parking shown: 356 spaces  
 Target: 426

South Shore Tech  
 AR 1  
 900 students

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

2<sup>nd</sup> Floor



1<sup>st</sup> Floor



OPTION AR 1

Student Enrollment Range: 645 - 975 Students	805 Students		900 Students	
	New* (all 3 options)	Add/Reno AR1 L Shape	New* (all 3 options)	Add/Reno AR1 L Shape
<b>TOTAL ESTIMATED PROJECT COSTS</b>	\$ 344,190,750	\$ 349,805,000	\$ 367,913,625	\$ 366,758,125
Cost/Student	\$ 427,566	\$ 434,540	\$ 408,793	\$ 407,509
<b>Estimated MSBA Participation Range***</b>	30.4%	30.5%	30.8%	30.5%
	\$ 104,633,988.00	\$ 106,690,525.00	\$ 113,317,396.50	\$ 111,861,228.13
<b>Estimated District Share Range***</b>	69.6%	69.5%	69.2%	69.5%
	\$ 239,556,762.00	\$ 243,114,475.00	\$ 254,596,228.50	\$ 254,896,896.88

Estimated Share By District\*\*\*\*

Abington	16.70%	\$ 40,005,979.25	\$ 40,600,117.33	\$ 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%	\$ 26,494,977.88	\$ 26,888,460.94	\$ 28,158,342.87	\$ 28,191,596.79
Hanson	13.03%	\$ 31,214,246.09	\$ 31,677,816.09	\$ 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
Rockland	22.77%	\$ 54,547,074.71	\$ 55,357,165.96	\$ 57,971,561.23	\$ 58,040,023.42
Scituate	6.60%	\$ 15,810,746.29	\$ 16,045,555.35	\$ 16,803,351.08	\$ 16,823,195.19
Whitman	24.25%	\$ 58,092,514.79	\$ 58,955,260.19	\$ 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.**

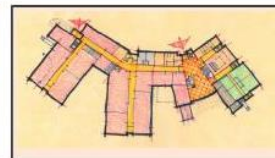
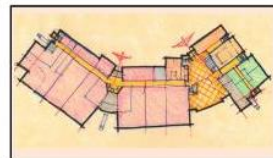
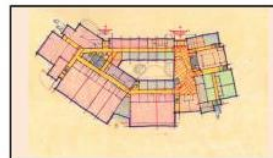
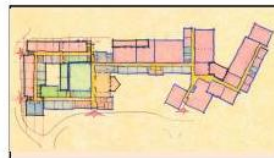
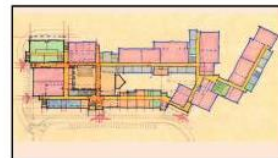


Preliminary Evaluation Matrix - South Shore Tech - Concept Options - **WORKING DRAFT**



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 Duration:	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 undersized	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 reimbursment rate for renovation High temporary costs.	Lower initial cost Higher reimbursment 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. 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			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 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
Totals								



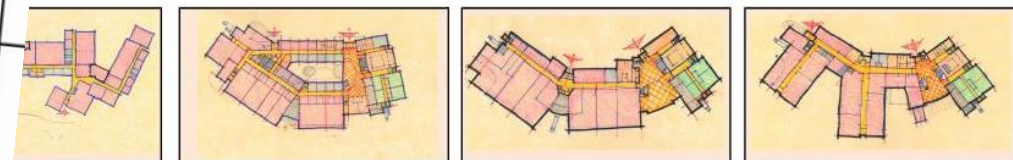
Updated:  
9/14/2023

Evaluation Criteria	Construction Duration:	MSBA Required	Renovation
		Base Repair	Renovation
Code Renovation			
multiple 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
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	

Options	New Construction Options		
	NC.1 Courtyard 2+ years	NC.2 Linear 2+ years	NC.3 Wings 2+ years
Good Ed Plan conformance	Good Ed Plan Conformance	Best Ed Plan Conformance	
Higher Initial Construction Cost	Higher Initial Construction Cost	Higher Initial Construction Cost	
Good Long-Term Value	Good Long-Term Value	Good Long-Term Value	
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.	
Short duration	Short duration	Short duration	
2 phases: 1. New construction, 2 Demolition & Sitework	2 phases: 1. New construction, 2 Demolition & Sitework	2 phases: 1. New construction, 2 Demolition & Sitework	
Good Flexibility, Good Community access	Good Flexibility, Good Community access	Good Flexibility, Good Community access	
Limited expansion potential	Limited expansion potential	Limited expansion potential	
All new construction, infrastructure, & MEP systems	All new construction, infrastructure, & MEP systems	All new construction, infrastructure, & MEP systems	
Best thermal envelope	Best thermal envelope	Best thermal envelope	
Site Approach focused on School	Site approach along edge of property	Site Approach focused on School	
Dedicated secure access to public shops	Dedicated secure access to public shops	Dedicated secure access to public shops	
Compact footprint, central student commons	Long linear corridor	Some dead-end corridors	
Larger footprint in a constrained site	Building layout follows buildable area	Wings create shared outdoor collaboration area	
Bus access at rear Enclosed outdoor courtyard	Separate Buses and Car drop-offs in front Patio off of the Commons	Bus access at rear off of the Commons Patio	
Playing fields may impact abutters	Playing fields may impact abutters	Playing fields may impact abutters	
School setback from street	School setback from street	School setback from street	
Athletic fields & parking in front yard	Athletic fields & parking in front yard	Athletic fields & parking in front yard	
All new construction = all new image	All new construction = all new image	All new construction = all new image	





# Discussion

School Building Committee

November 2, 2023

 LeftField

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



100  
YEARS

DRA



# 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

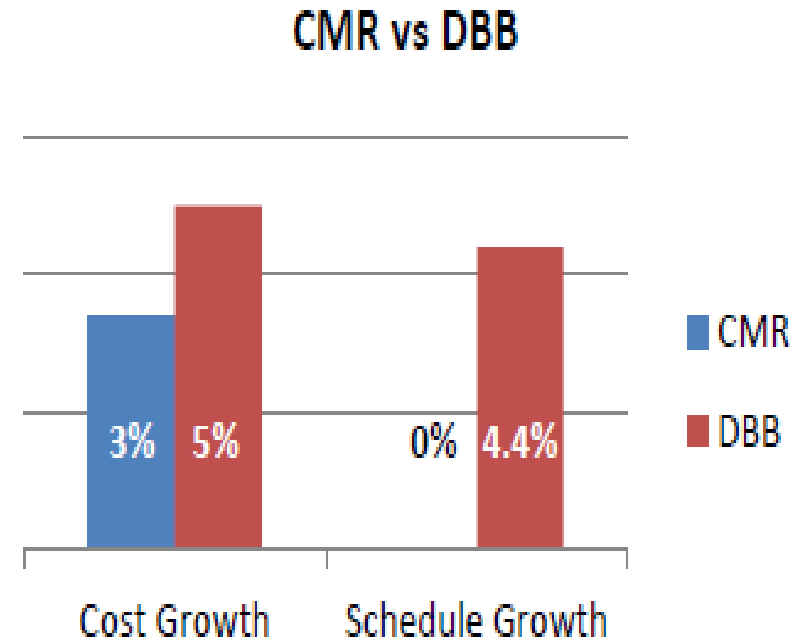
## CONSTRUCTION DELIVERY METHOD



### 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