



**PERKINS —
EASTMAN**

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DENNIS-YARMOUTH SCHOOL PROJECT

SCHOOL BUILDING COMMITTEE

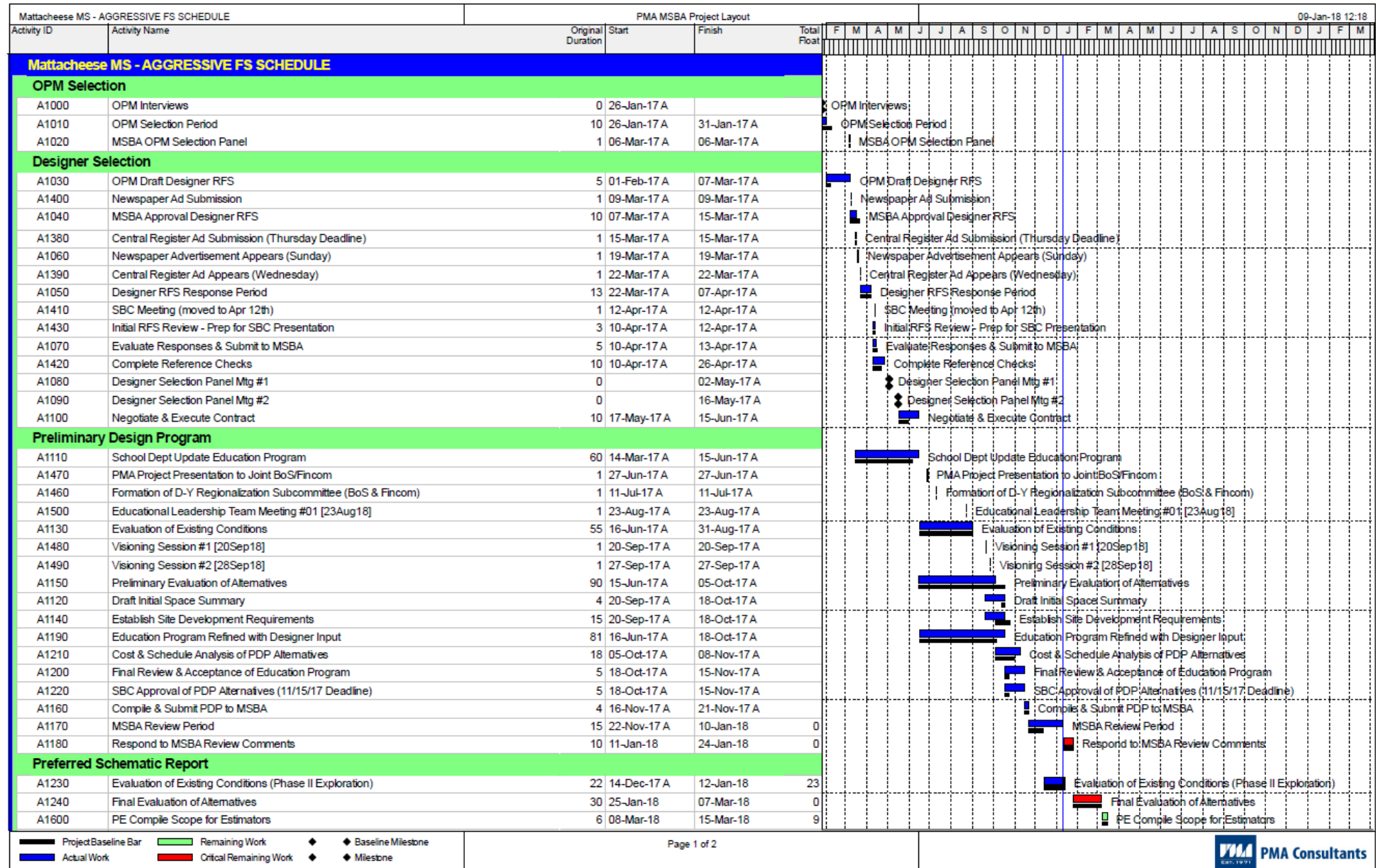
February 28, 2018



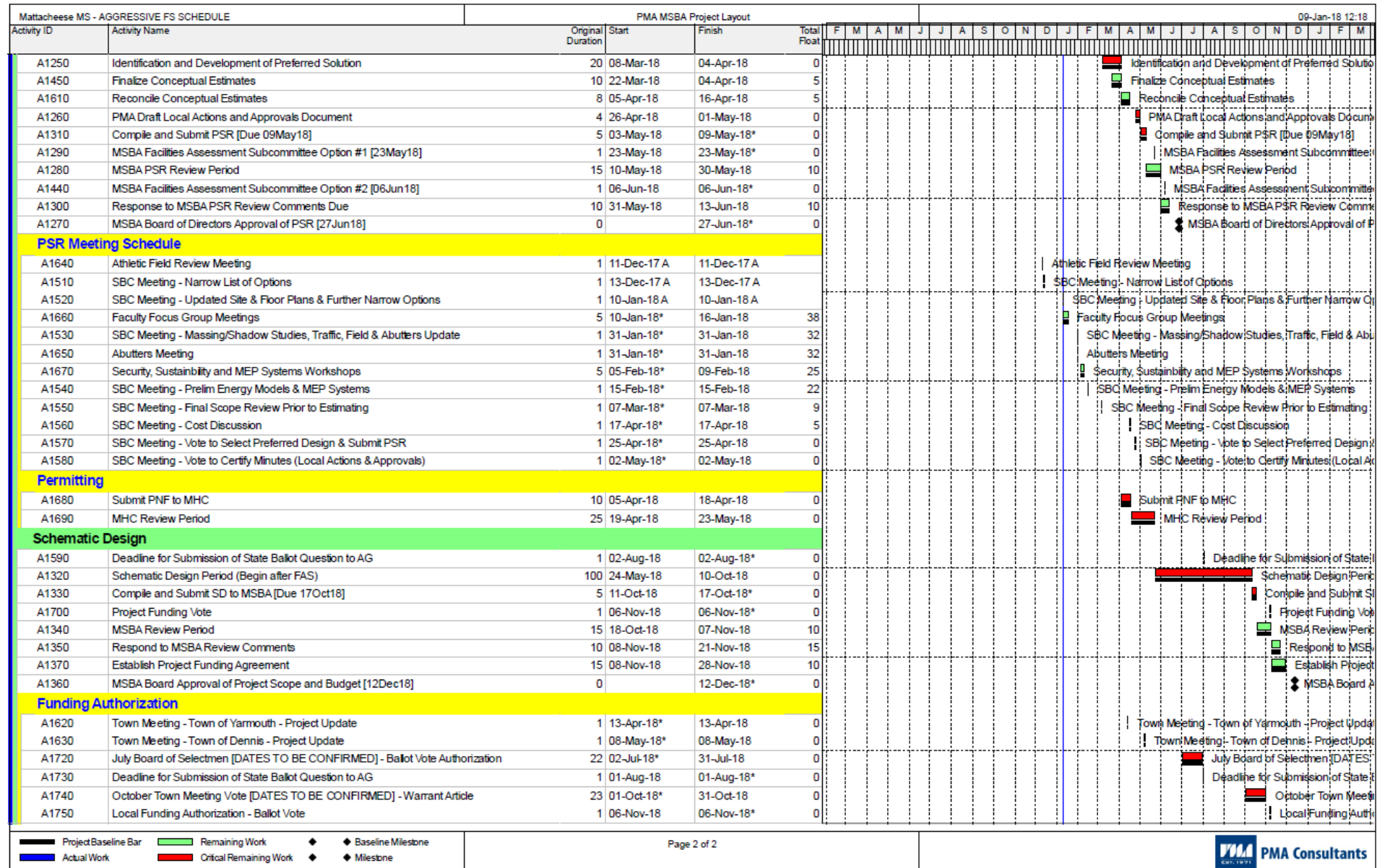
SCHEDULE AND DECISIONS

- Wednesday, Jan. 10 – SBC (review options – preferred site)
- Wednesday, Jan. 31 – Abutters Meeting #1
- Wednesday Jan. 31 – SBC (options refinements, massing & shadow studies)
- Thursday, Feb. 15 – SBC (options refinements + systems & energy modeling)
- Wednesday, Feb. 28 – SBC (options refinements + re-evaluation of sites and plans)
- Wednesday, Feb. 28 – Abutters Meeting #2
- Wednesday, Mar. 7 – SBC Selection of Preferred Solution
- Wednesday, Mar. 7 – Local Actions & Approvals of Solution (BoS/FinCom/SC)
- Wednesday, Apr. 11 – SBC (cost discussion following estimate reconciliation)
- **Monday, Apr. 23 – Joint BoS, Finance, School Committee**
- Wednesday, Apr. 25 – SBC (vote to submit Preferred Schematic Report)
- Wednesday, May 9 – Compile & Submit PSR
- Wednesday, May 23 – MSBA Facilities Assessment Subcommittee Meeting
- Wednesday, Jun. 27 MSBA Board of Directors (for PSR approval)

PROJECT SCHEDULE (1/2)



PROJECT SCHEDULE (2/2)



SPACE SUMMARY UPDATE (1/2)

Proposed Space Summary v9 (draft for PSR)

Dennis-Yarmouth	EXISTING SCHOOLS COMBINED									
	WIXON INTERMEDIATE					MATTACHEESE MIDDLE				
	ROOM NFA ¹	# OF RMS	area totals	ROOM NFA ¹	# OF RMS	area totals	COMBINED totals			
ROOM TYPE										
CORE ACADEMIC SPACES			24,275			24,260				48,535
(List classrooms of different sizes separately)										
Classroom - General	848	24	20,363	857	17	14,561	852	41	34,924	
Health	717	1	717	852	1	852	785	2	1,569	
World Language			0	853	3	2,560	853	3	2,560	
		25			21			46		
Sm. Grp/Resource (1 EL/gr. w/ 5-10 stu)	889	1	889	691	1	691	790	2	1,580	
Science Classroom / Lab	1,153	2	2,306	1,298	3	3,894	1,240	5	6,200	
				851	2	1,702	851	2	1,702	
		2			5			7		
Prep Room			0			0				
SPECIAL EDUCATION	Wixon has 19% IEPs		9,840	MMS has 21% IEP		11,613	District = 56% FRL		21,453	
(List classrooms of different sizes separately)										
Self-Contained (2 ASD/STAR, 2 Dev. Delay/SAILS, Crit Care, NECC + Behav)	849	3	2,546	1,119	3	3,358	984	6	5,902	
Self-Contained SPED Toilet			0			0				
Resource Room (Rdg/ELA, Math + Wrk)	679	5	3,395	818	9	7,359	768	14	10,754	
Small Group Room (Lgr Sm IEP Conf)	205	3	616	263	1	268	221	4	864	
OT (incl. Visual Impaired Services)	1,797	1	1,797			0	1,797	1	1,797	
PT/Adaptive PE (MP/colocate w/ Gym)										
Office/Mtg (2 Psy, 2 Soc, 2 Tm & 2 Spch)	297	3	892	210	3	630	254	6	1,522	
CoTeaching Space within Classrooms			0			0				
Storage (2 Soc Work, 2 Rdg, OT & Psy)	198	3	594			0	198	3	594	
ART & MUSIC			5,812			4,563			10,375	
Art Classroom	1,258	2	2,515	1,439	1	1,439	1,318	3	3,954	
Art Workroom w/ Storage & kiln	181	1	181	327	1	327	254	2	508	
Band / Chorus - 100 seats	1,417	2	2,834	1,107	2	2,213	1,262	4	5,044	
Music Practice / Ensemble			0	329	1	329	329	1	329	
Music Storage	141	2	282	128	2	255	134	4	533	
VOCATIONS & TECHNOLOGY			1,677			3,331			5,008	
Tech Clrm. - (computer labs)	839	2	1,677	658	4	2,631	718	6	4,308	
Tech Shop - (incl. Maker Space / Stor.)			0	700	1	700	700	1	700	
HEALTH & PHYSICAL EDUCATION			13,155			13,733			26,888	
Gymnasium	4,750	2	9,500	7,059	1	7,059	5,520	3	16,559	
Fitness Room			0	1,591	2	3,182	1,591	2	3,182	
Gym Storeroom	193	6	1,158	183	5	915	189	11	2,074	
Hlth instructor Office w/ Shower & Toilet	142	2	284	152	2	304	147	4	588	
Locker Rooms - Boys / Girls w/ Toilets	1,107	2	2,213	1,136	2	2,272	1,121	4	4,489	
MEDIA CENTER			3,534			3,064			6,598	
Media Center / Reading Room	3,534	1	3,534	3,064	1	3,064	3,299	2	6,598	
DINING & FOOD SERVICE			8,650			11,172			19,822	
Cafetorium / Dining (incl. Dolphin Diner)	4,746	1	4,746	5,937	1	5,937	5,342	2	10,883	
Stage	1,018	1	1,018	1,140	1	1,140	1,079	2	2,158	
Chair / Table / Equipment Storage	176	1	176	227	1	227	202	2	403	
Kitchen	2,488	1	2,488	3,620	1	3,620	3,054	2	6,108	
Staff Lunch Room	222	1	222	248	1	248	235	2	473	

PROPOSED					
SEPARATE GR.6-7 (455)			COMBINED GR.4-7 (940)		
ROOM NFA ¹	# OF RMS	area totals	ROOM NFA ¹	# OF RMS	area totals
		21,730			44,850
850	13	11,050	850	35	29,750
850	1	850	850	2	1,700
850	3	2,550	850	4	3,400
	17			41	
500	4	2,000	500	4	2,000
1,200	4	4,800	1,200	6	7,200
80	6	480	80	10	800
		12,460			20,400
900	4	3,600	900	7	6,300
80	4	240	80	7	420
450	5	2,250	450	9	4,050
300	1	300	200	2	400
450	1	450	450	1	450
3,000	1	3,000	3,000	1	3,000
150	4	600	150	8	1,200
100	17	1,700	100	41	4,100
80	4	320	80	6	480
		4,750			8,000
1,200	1	1,200	1,200	2	2,400
150	1	150	150	2	300
1,500	2	3,000	1,500	3	4,500
300	1	300	300	2	600
100	1	100	200	1	200
Stage also as 1 rm. for Music		1,700	Stage also as 1 rm. for Music		3,400
1,200	0	0	1,200	0	0
1,700	1	1,700	1,700	2	3,400
Subdivide/Disperse		8,550	Subdivide/Disperse		11,650
3,000	2	6,000	3,000	3	9,000
0		0	0		0
150	1	150	150	1	150
200	2	400	250	2	500
1,000	2	2,000	1,000	2	2,000
		2,996			5,785
2,996	1	2,996	5,785	1	5,785
		7,334			11,738
3,413	1	3,413	7,050	1	7,050
1,600	1	1,600	1,600	1	1,600
352	1	352	513	1	513
1,755	1	1,755	2,240	1	2,240
214	1	214	335	1	335

MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)					
SEPARATE GR.6-7 (455)			COMBINED GR.4-7 (940)		
ROOM NFA ¹	# OF RMS	area totals	ROOM NFA ¹	# OF RMS	area totals
		21,770			44,820
950	17	16,150	950	34	32,300
					950 SF min - 950 SF max
0			0		
17			34		
500	1	500	500	2	1,000
1,200	4	4,800	1,200	9	10,800
					1 period / day / student
80	4	320	80	9	720
		5,540			10,570
950	4	3,600	950	7	6,650
60	4	240	60	7	420
500	2	1,000	500	5	2,500
500	1	500	500	2	1,000
					assumed 8% of pop. in self-contained SPED
					1/2 size Genl. Ctm.
					1/2 size Genl. Ctm.
1,200	1	1,200	1,200	2	2,400
150	1	150	150	2	300
1,500	1	1,500	1,500	1	1,500
200	1	200	200	3	600
200	1	200	200	1	200
		3,200			6,400
1,200	1	1,200	1,200	2	2,400
2,000	1	2,000	2,000	2	4,000
		8,400			8,400
6,000	1	6,000	6,000	1	6,000
150	1	150	150	1	150
250	1	250	250	1	250
1,000	2	2,000	1,000	2	2,000
		2,996			5,785
2,996	1	2,996	5,785	1	5,785
		7,333			11,738
3,413	1	3,413	7,050	1	7,050
1,600	1	1,600	1,600	1	1,600
352	1	352	513	1	513
1,755	1	1,755	2,240	1	2,240
214	1	214	335	1	335
					1630 SF for first 300 + 1 SF/student Addl
					20 SF/occupant

SPACE SUMMARY UPDATE (2/2)

Proposed Space Summary v9 (draft for PSR)

		EXISTING SCHOOLS COMBINED					
Dennis-Yarmouth		WIXON INTERMEDIATE			MATTACHEESE MIDDLE		
ROOM TYPE	ROOM 1 NFA	# OF RMS	area totals	ROOM 1 NFA	# OF RMS	area totals	COMBINED totals
MEDICAL			744			209	953
Medical Suite Toilet	85	2	129			65	129
Nurses' Office / Waiting Room	241	2	482	209	1	209	230
Examination Room / Resting	133	1	133			0	133
ADMINISTRATION & GUIDANCE			3,094			4,314	7,408
General Office / Waiting Room / Toilet	314	1	314	1,788	1	1,788	1,051
Teachers' Mail and Time Room	within General Office			within General Office			within General Office
Duplicating Room	134	1	134	232	1	232	183
Records Room	134	1	134	70	1	70	102
Principal's Office w/ Conference Area	253	1	253	390	1	390	322
Principal's Secretary / Waiting	within General Office			within General Office			within General Office
Assistant Principal's Office - AP1	253	1	253	98	1	98	176
Assistant Principal's Office - AP2			0			0	0
Supervisory / Spare Office	77	1	77			0	77
Conference Room	929	1	929	252	2	504	478
Guidance Office	85	2	129	140	2	280	102
Guidance Waiting Room	186	1	186			0	186
Guidance Storeroom			0			0	0
Teachers' Work Room	685	1	685	476	2	952	546
CUSTODIAL & MAINTENANCE			2,465			3,494	5,959
Custodian's Office	110	1	110	68	1	68	89
Custodian's Workshop	251	1	251			0	251
Custodian's Storage / Closets	59	9	534	76	5	382	65
Recycling Room / Trash			0			0	0
Receiving and General Supply	110	1	110	239	1	239	175
Storeroom (incl. Books + Mezz)	237	5	1,184	370	5	1,848	303
Network / Telecom Room	276	1	276	957	1	957	617
OTHER			5,092			7,909	13,001
Auditorium+Stage (463 WIS/734 MMS)	5,092	1	5,092	7,269	1	7,269	6,181
Dressing Rooms			0	225	2	450	
SRO Office			0	95	2	190	95
Gosholt Office			0				
School Store							
Total Building Net Floor Area (NFA)			78,338			87,662	166,000
Proposed Student Capacity / Enrollment	(90 total staff)		545	(80 total staff)		455	(170 total staff)
Total Building Gross Floor Area (GFA) ²			116,090			115,880	231,970
Grossing factor (GFA/NFA)			1.48			1.32	

PROPOSED					
SEPARATE GR.6-7 (455)			COMBINED GR.4-7 (940)		
ROOM NFA ¹	# OF RMS	area totals	ROOM NFA ¹	# OF RMS	area totals
		570			770
60	2	120	60	2	12
250	1	250	250	1	25
100	2	200	100	4	40
		2,806			4,190
328	1	328	250	2	50
100	1	100	50	2	10
200	1	200	150	2	30
200	1	200	150	2	30
375	1	375	200	2	40
125	1	125	100	2	20
150	1	150	150	1	15
		0	150	1	15
150	1	150	150	1	15
350	1	350	350	2	70
150	2	300	150	4	60
100	1	100	75	2	15
50	1	50	45	2	9
378	1	378	200	2	40
		1,930			2,850
150	1	150	150	1	15
250	1	250	250	1	25
375	1	375	750	1	75
400	1	400	400	1	40
252	1	252	500	1	50
303	1	303	600	1	60
200	1	200	200	1	20
		8,800			8,850
8,500	1	8,500	8,500	1	8,50
		0			
150	1	150	200	1	20
150	1	150	150	1	15
within net/gross			within net/gross		
+ 16k (7x spd/9k aud)			+22k (10 spd/3 pe/9 aud)		
73,626			122,483		
455			940		
110,439			183,725		
1.50			1.50		

MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)						
SEPARATE GR.6-7 (455)			COMBINED GR.4-7 (940)			
ROOM NFA ¹	# OF RMS	area totals	ROOM NFA ¹	# OF RMS	area totals	Comments
		510			710	
60	1	60	60	1	60	
250	1	250	250	1	250	
100	2	200	100	4	400	
		2,955			3,890	
328	1	328	570	1	570	
100	1	100	100	1	100	
200	1	200	200	1	200	
200	1	200	200	1	200	
375	1	375	375	1	375	
125	1	125	125	1	125	
150	1	150	150	1	150	
150	0	-	150	1	150	
150	1	150	150	1	150	
350	1	350	350	1	350	
150	3	450	150	5	750	
100	1	100	100	1	100	
50	1	50	50	1	50	
378	1	378	620	1	620	
		1,930			2,415	
150	1	150	150	1	150	
250	1	250	250	1	250	
375	1	375	375	1	375	
400	1	400	400	1	400	
252	1	252	413	1	413	
303	1	303	627	1	627	
200	1	200	200	1	200	
		0			0	
		57,884			99,728	
		455			940	
		84,305			150,400	
		1.46			1.51	

Individual Room Net Floor Area (NFA) Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.

² **Total Building Gross Floor Area (GFA)** Includes the entire building gross square footage measured from the outside face of exterior walls

S2 - GRASS FIELDS

Existing

- XMU1. Full Size Multi-use
- XMU2. Full Size Multi-use
- XMU3. Full Size Multi-use
- XMU4. Full Size Multi-use
- XMU5. Full Size Multi-Use
- XBB1. 90' Baseball (JV)
- XBB2. 90' Baseball
- XSB1. 60' Softball/Little-League
- XSB2. 60' Softball/Little League

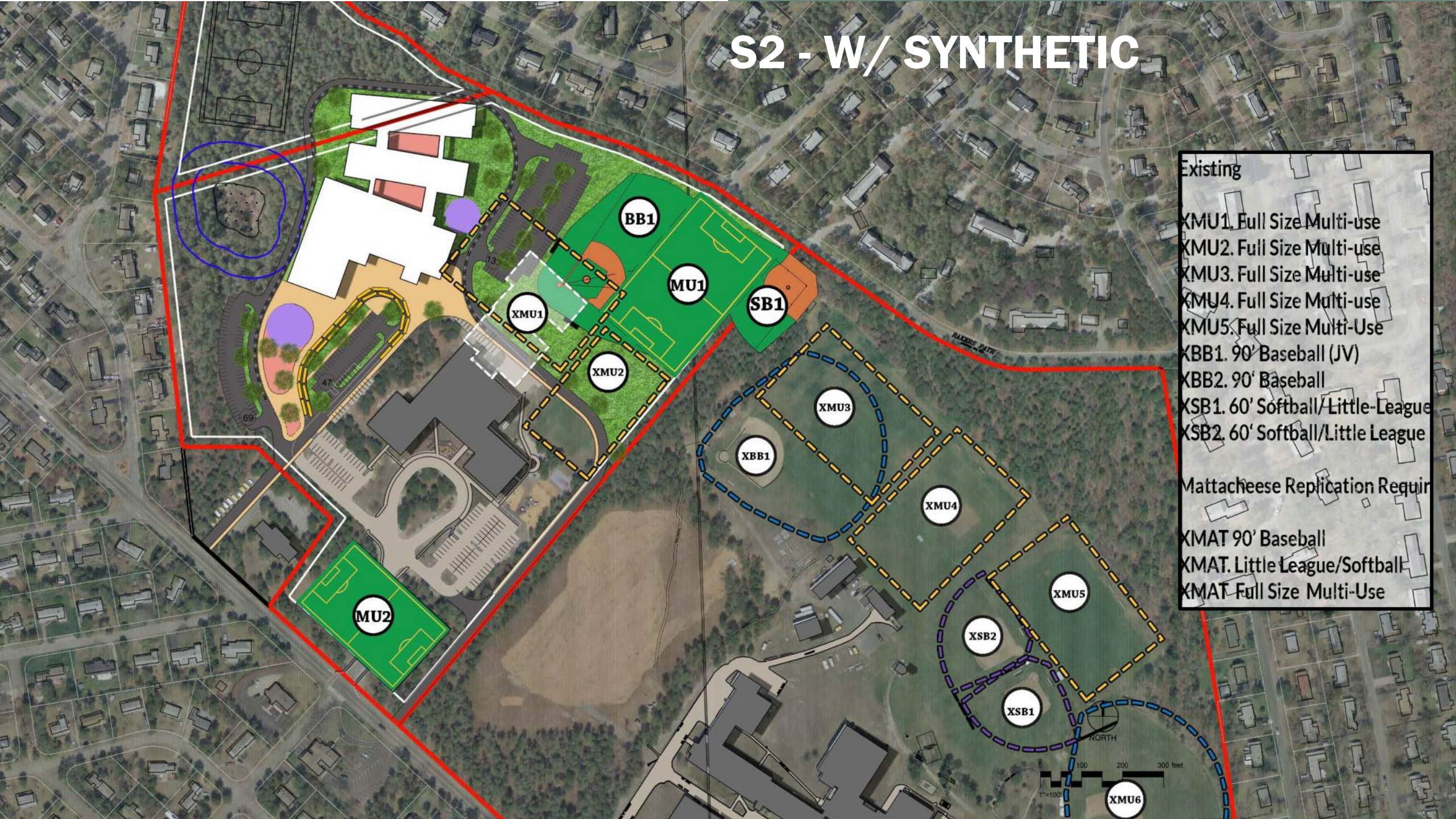
Mattacheese Replication Required

- XMAT 90' Baseball
- XMAT Little League/Softball
- XMAT Full Size Multi-Use

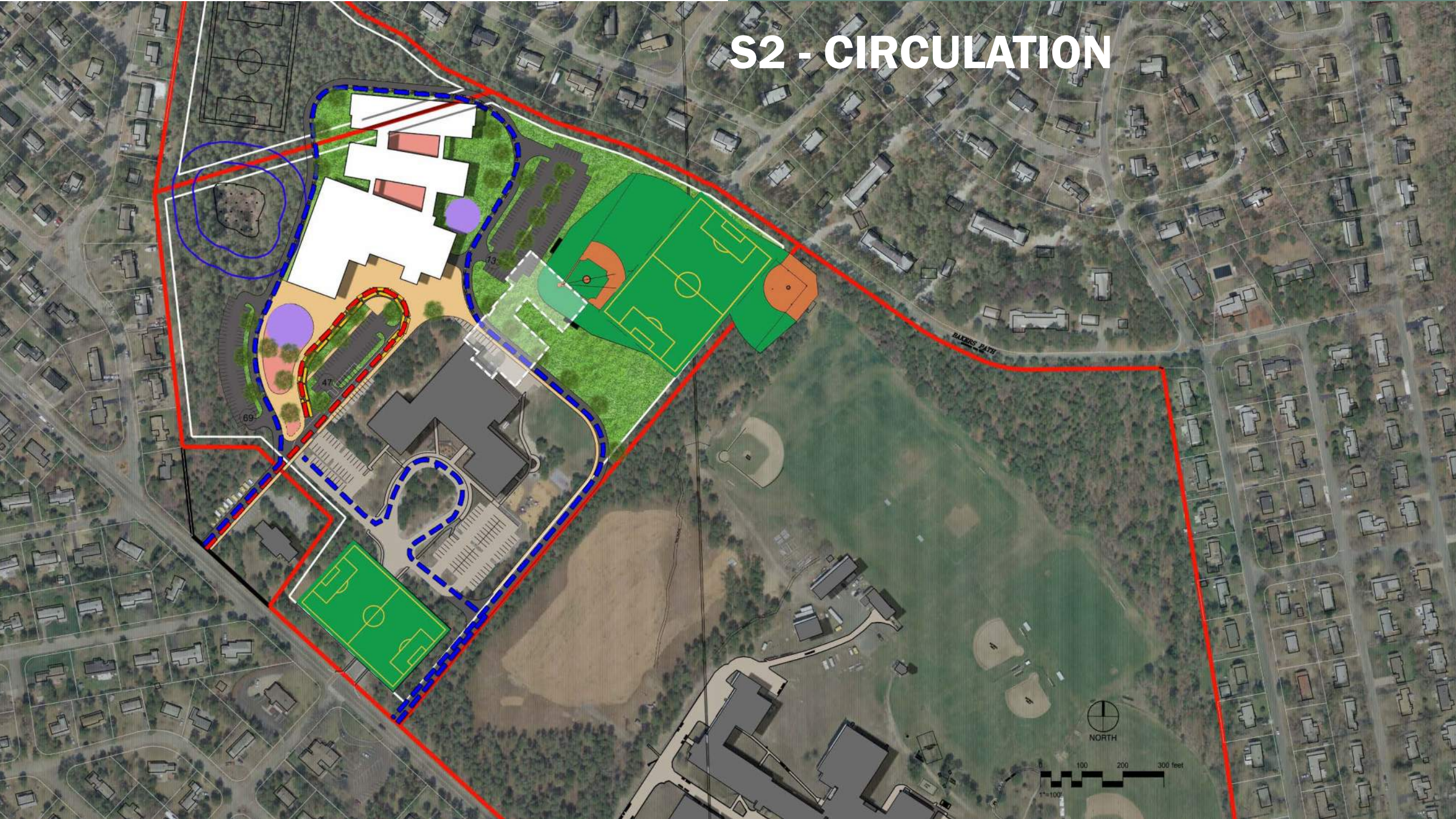
KMU1. Full Size Multi-use
 KMU2. Full Size Multi-use
 KMU3. Full Size Multi-use
 KMU4. Full Size Multi-use
 KMU5. Full Size Multi-Use
 XBB1. 90' Baseball (JV)
 XBB2. 90' Baseball
 XSB1. 60' Softball/Little-League
 XSB2. 60' Softball/Little League

XMAT 90' Baseball
XMAT Little League/Softball
XMAT Full Size Multi-Use

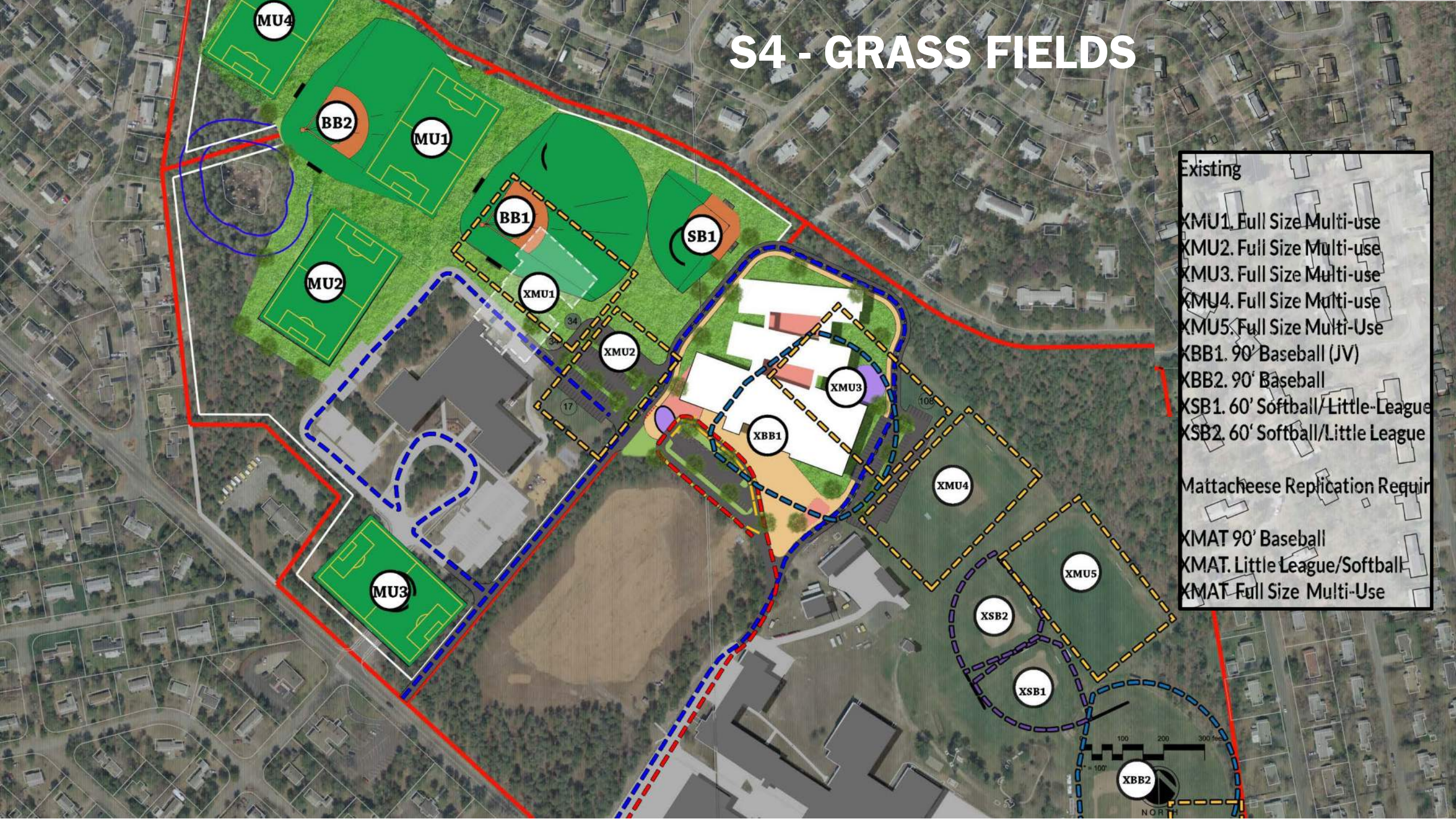
S2 - W/ SYNTHETIC



S2 - CIRCULATION



S4 - GRASS FIELDS



Existing

XMU1. Full Size Multi-use

XMU2. Full Size Multi-use

XMU3. Full Size Multi-use

XMU4. Full Size Multi-use

XMU5. Full Size Multi-Use

XBB1. 90' Baseball (JV)

XBB2. 90' Baseball

XSB1. 60' Softball/Little League

XSB2. 60' Softball/Little League

Mattacheese Replication Required

XMAT 90' Baseball

XMAT. Little League/Softball

XMAT Full Size Multi-Use

S4 - W/ SYNTHETIC

Existing

- XMU1. Full Size Multi-use
- XMU2. Full Size Multi-use
- XMU3. Full Size Multi-use
- XMU4. Full Size Multi-use
- XMU5. Full Size Multi-Use
- XBB1. 90' Baseball (JV)
- XBB2. 90' Baseball
- XSB1. 60' Softball/Little-League
- XSB2. 60' Softball/Little League

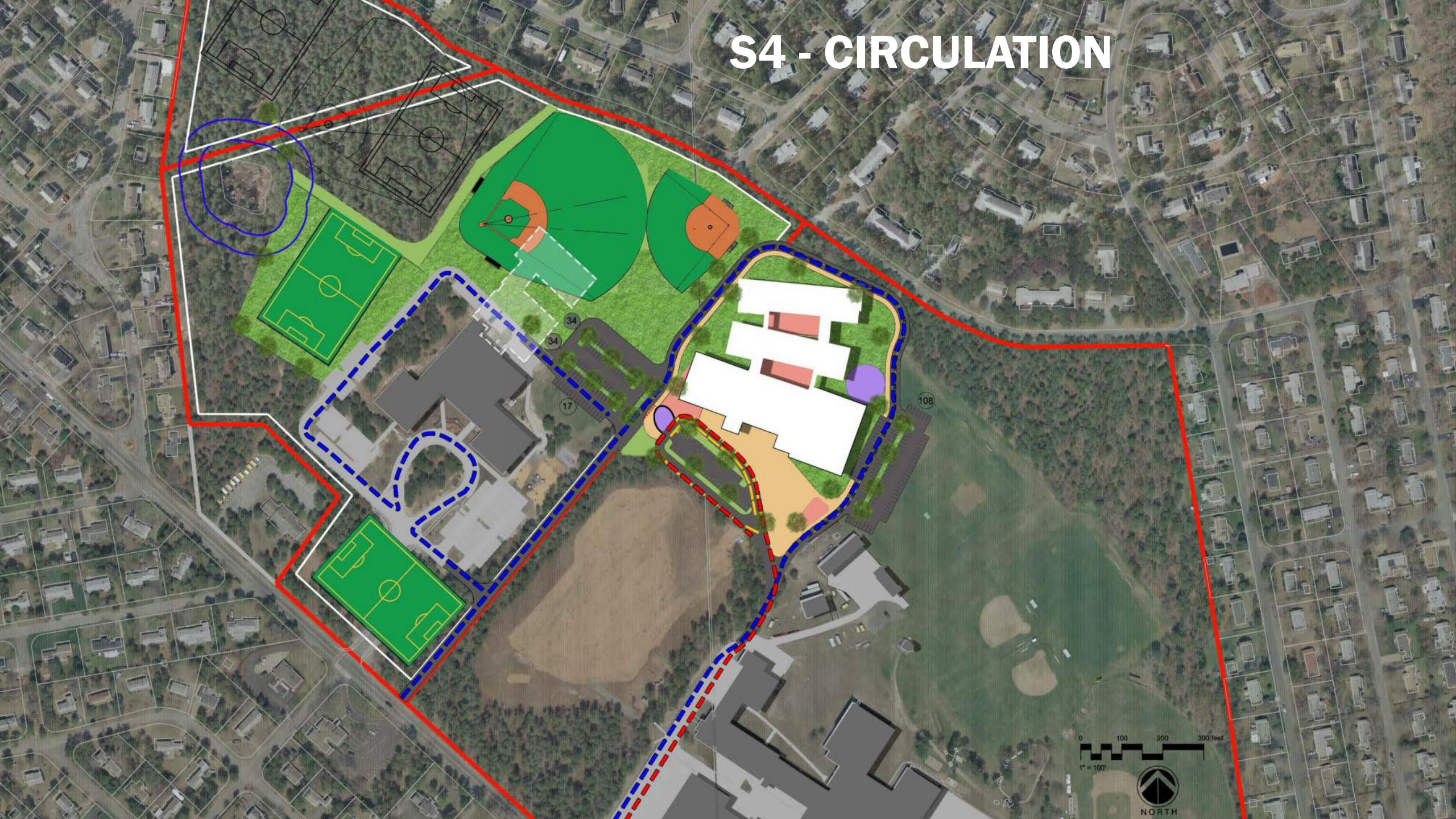
Mattacheese Replication Required

- XMAT 90' Baseball
- XMAT Little League/Softball
- XMAT Full Size Multi-Use

XMU1. Full Size Multi-use
XMU2. Full Size Multi-use
XMU3. Full Size Multi-use
XMU4. Full Size Multi-use
XMU5. Full Size Multi-Use
XBB1. 90' Baseball (JV)
XBB2. 90' Baseball
XSB1. 60' Softball/Little-League
XSB2. 60' Softball/Little League

XMAT 90' Baseball
XMAT Little League/Softball
XMAT Full Size Multi-Use

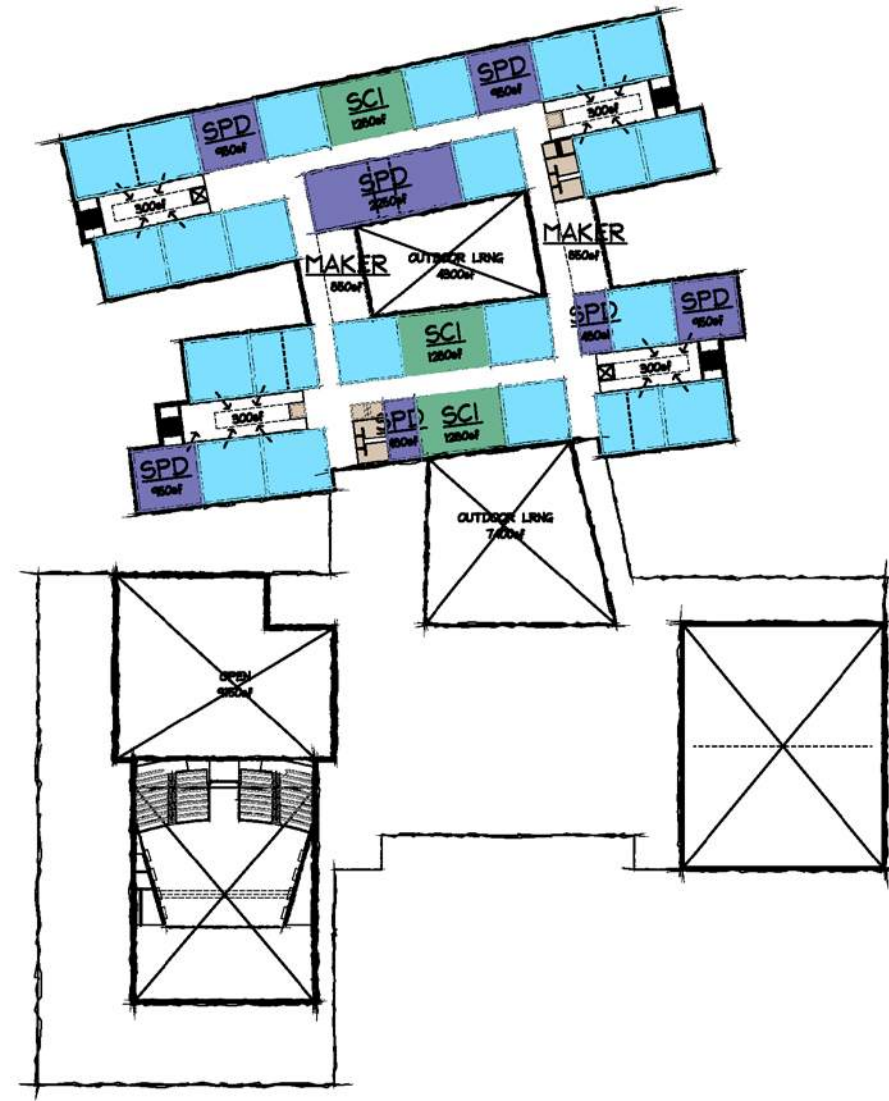
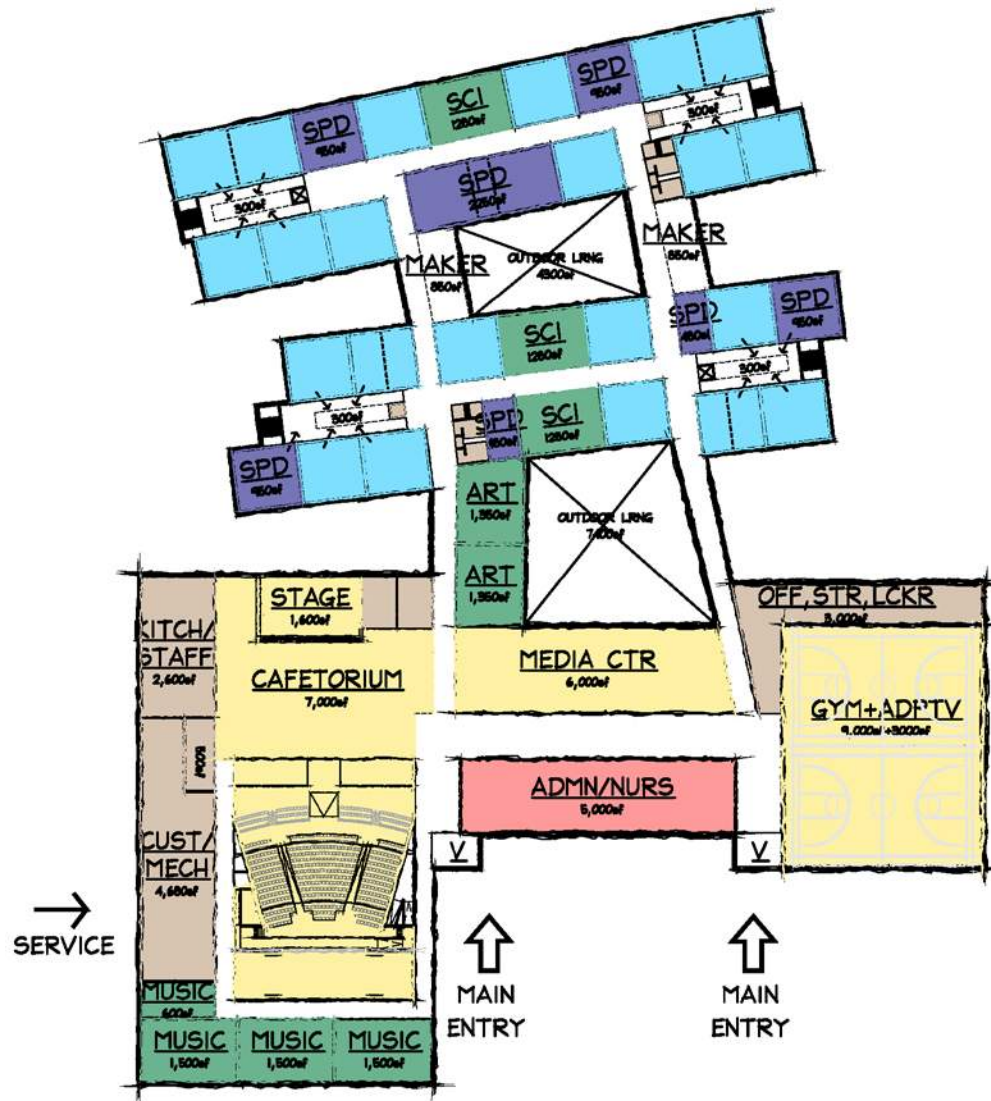
S4 - CIRCULATION



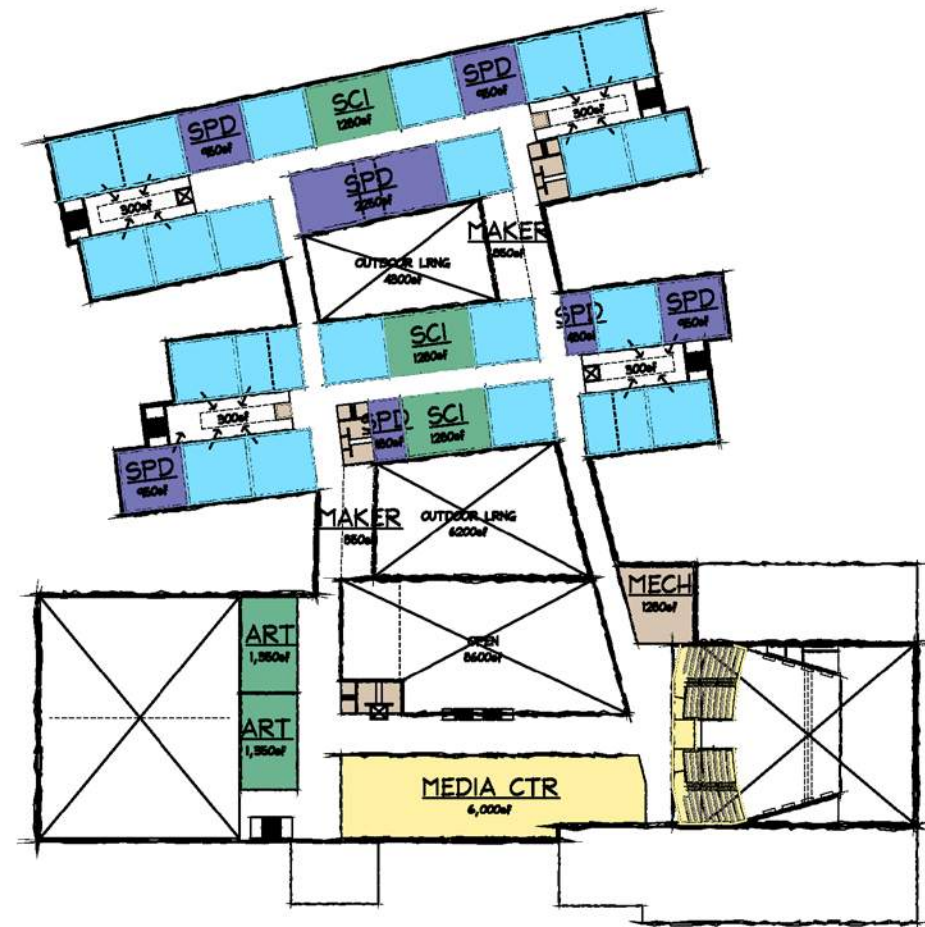
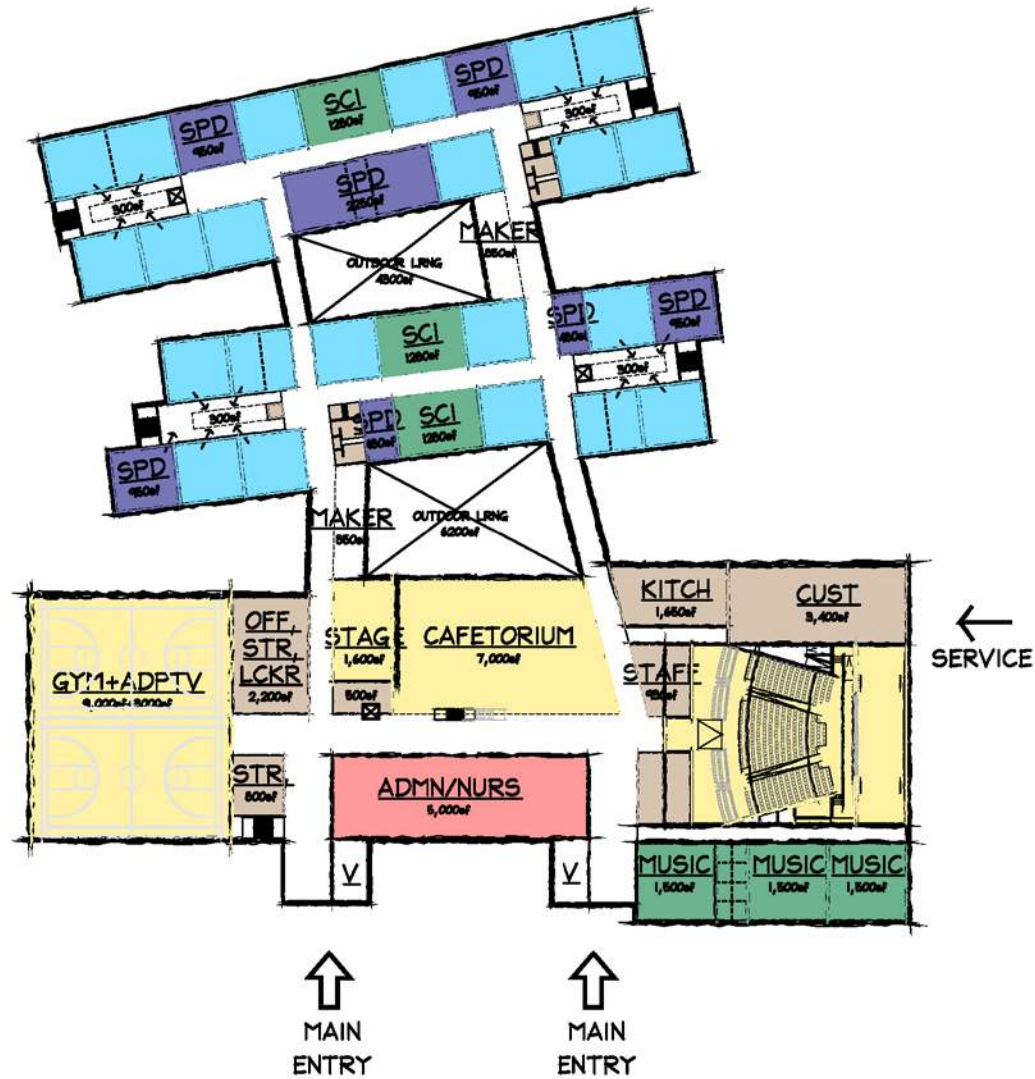


STATION AVENUE OPTIONS

S2 COMMUNITY FRONT (GR. 4-7)



S4 COMMUNITY FRONT (GR. 4-7)



OPTIONS ON EXISTING SITES

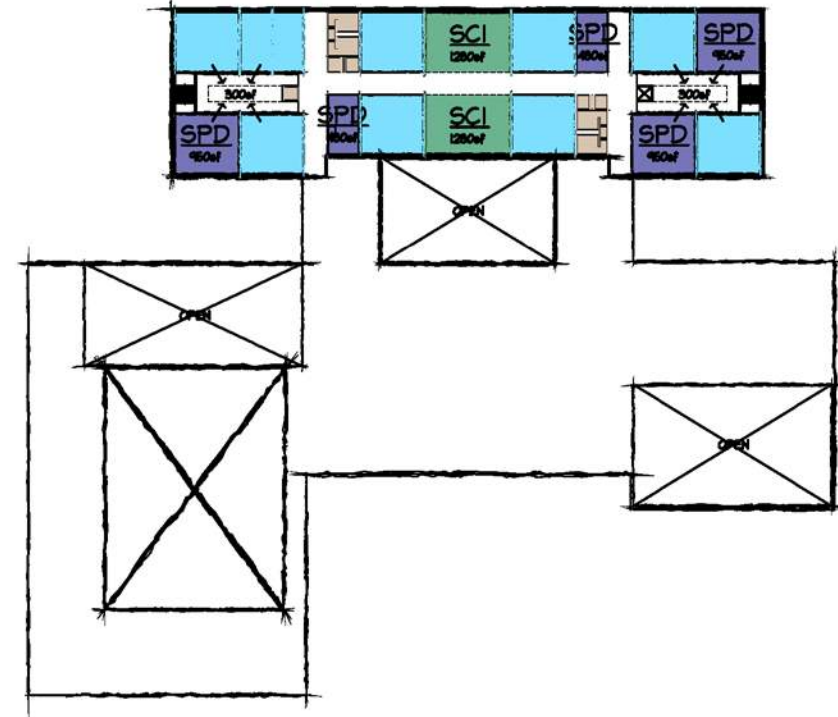
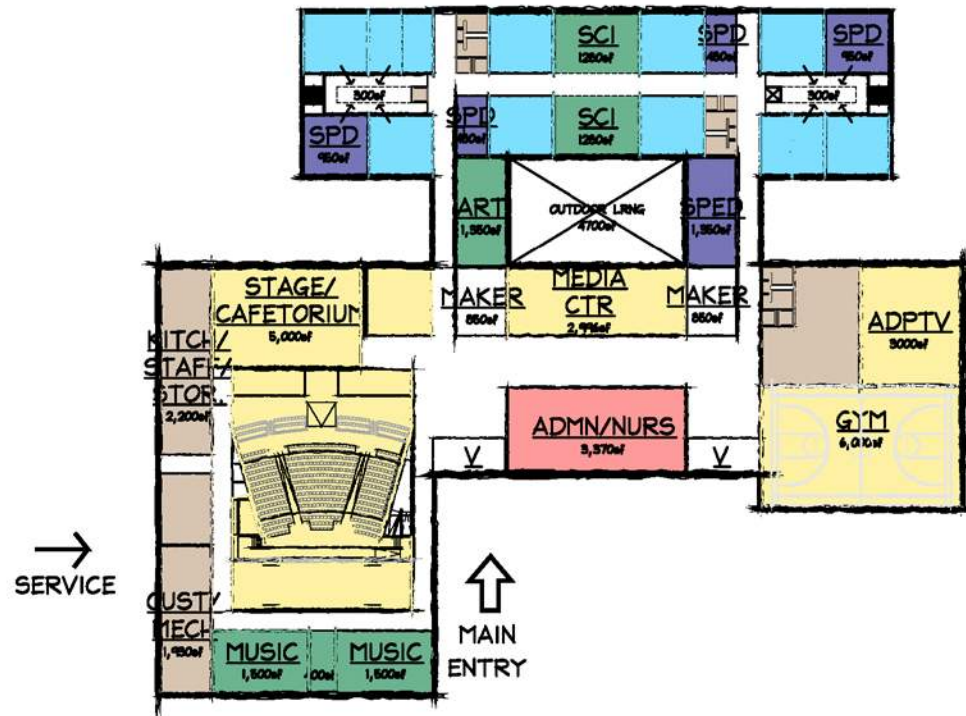


M1 (Mattacheese Gr. 6-7)

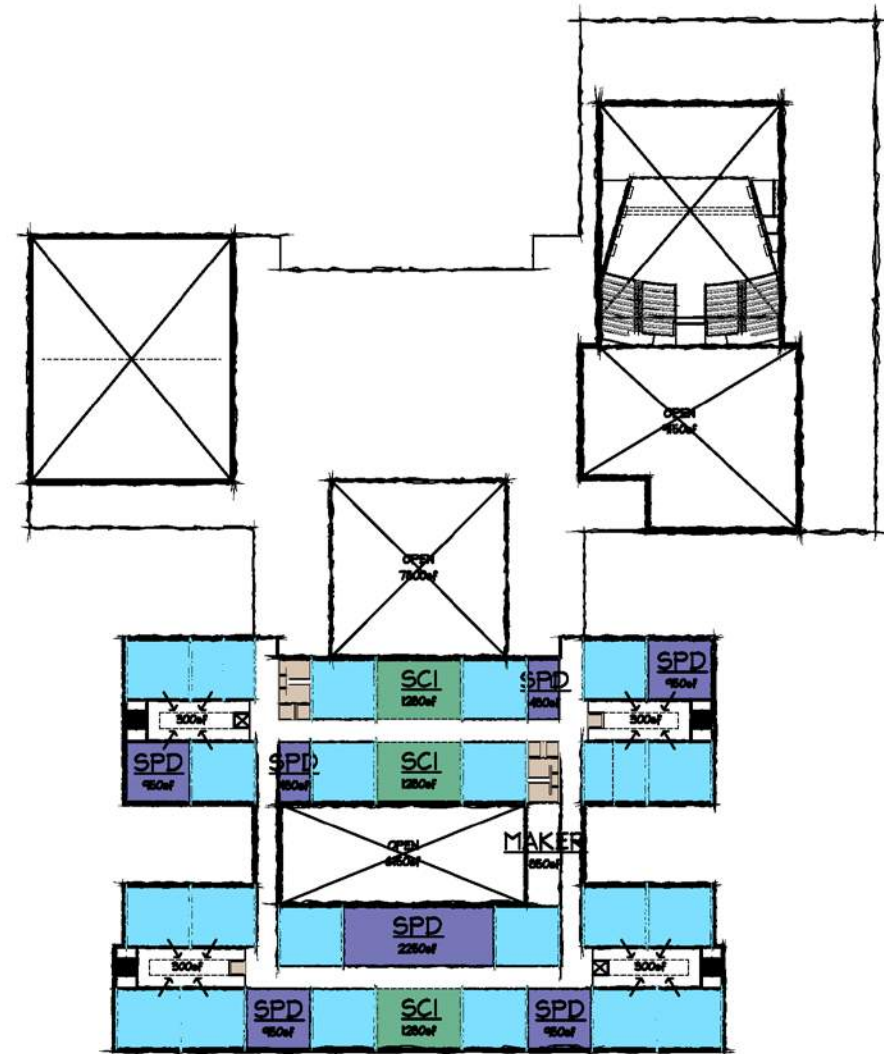
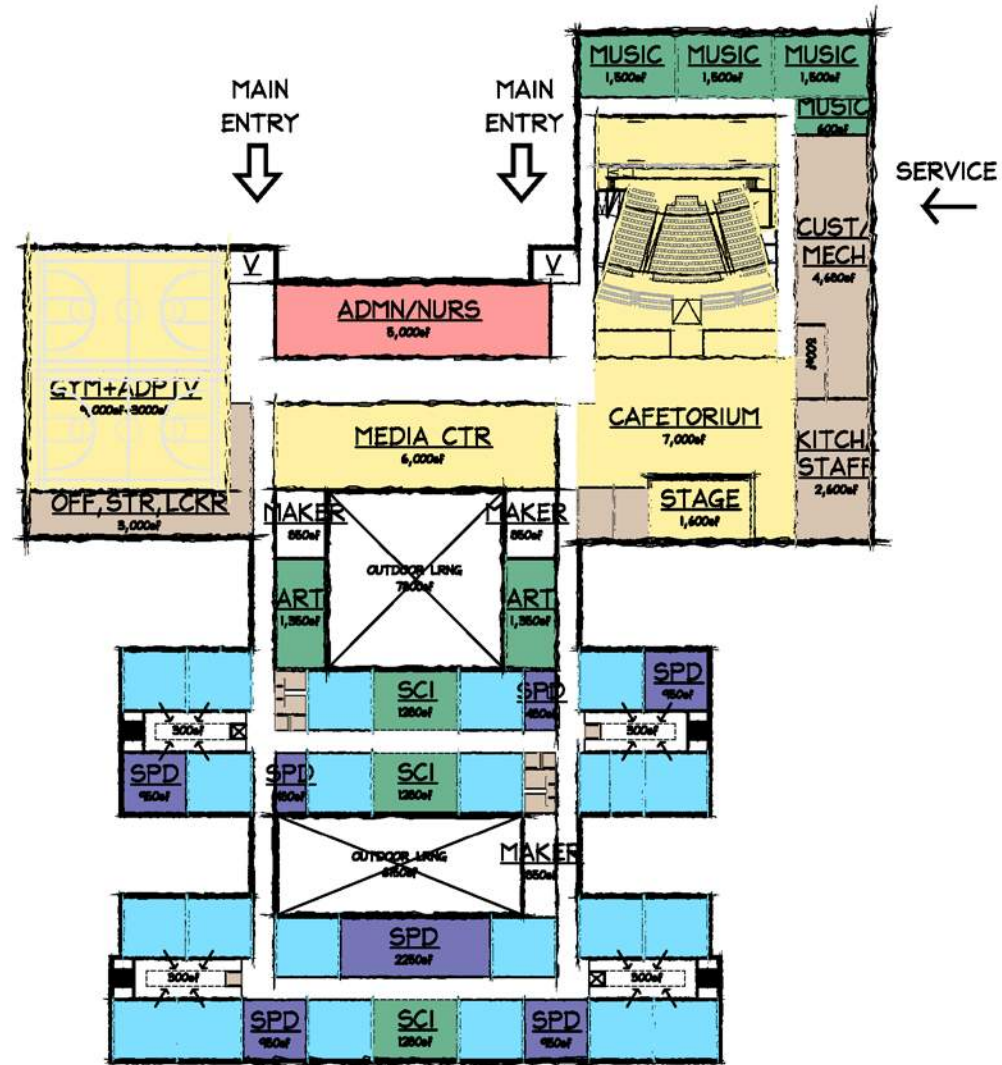


W2 (Wixon Gr. 4-7)

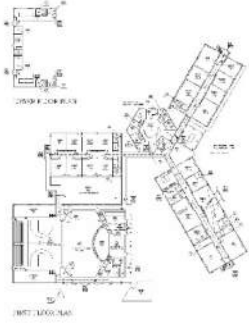
M1 COMMUNITY FRONT (GR. 6-7)



W2 COMMUNITY FRONT (GR. 4-7)



OPTIONS UNDER STUDY



MRX MATTACHEESE SITE CODE + REPAIRS ONLY

Relatively Flat Site, 70 Acre
(40 useable, 21 developed)
Aquafer-protect + Wetland

Repair Costs Trigger 30%
Threshold Requiring Full
Accessibility Compliance &
Renovation

Waffle Slab Construction
Difficult To Renovate –
Limited Room For Modern
Mechanical Systems

**Will Not Meet Educational
Program** – MSBA Core
Program Will Not Support

Occupied Phased Reno
Cost Prohibitive &
Disruptive



M1 MATTACHEESE SITE ALL NEW (GR. 6-7)

Relatively Flat Site, 70 Acre
(40 useable, 21 developed)
Aquafer-protect + Wetland

Site/Traffic Considerations:
Remains Similar To Existing
Separate Bus & Car Loops

Construction/Phasing:
Limited Impact To School
(Mostly Parking & Access)

Educational & Community:
Keeps Existing Transitions
Does Not Address Existing
Deficiencies At Wixon As
Outlined In SOI

Cost Considerations:
Less Cost Immediately
Much Higher Cost Overall
w/ Wixon Addressed Later



W2 WIXON SITE ALL NEW (GR. 4-7)

Partial Sloped Site, 34 Acre
(30 useable, 23 developed)
Wellhd, Historic + Wetland

Site/Traffic Considerations:
Increased Traffic
Shorter Que For More Cars
Car Loop Not Near Entry

Construction/Phasing:
Limited Impact To School
(Mostly Parking & Access)
Temp. Loss Of Track/Field

Educational & Community:
Not Centrally Located,
Creates Inequitable Travel,
Rooms Close To Main Road
Keeps Existing Playground

Cost Considerations:
Less Cost Over Time With
2 Schools Addressed Now
Slightly More Than S2 & S4



S2 STATION AVE SITE ALL GRASS FIELDS

Relatively Flat Site, 70 acre (40 useable, approximately 25 developed), Aquafer Protection Distr. and Wetland)

Site/Traffic Considerations:
Utilizes Existing Curb Cuts
Long Car Que (Off-street)
Most Fields Central to All
Major Tree Clearing Req'd

Construction/Phasing:
Minimal Impact To Schools
Limited Field Disturbance

Educational & Community:
Centrally Located, Travel
Equity For Both Towns
Bldg Proximity To Homes

Cost Considerations:
Least Cost Over Time With
2 Schools Addressed Now



S2 STATION AVE SITE SYNTHETIC FIELDS

Same S2's Pro's/Con's
Except No Field Req'd
In The N/W Corner

Less Tree Clearing,
Less Homes Impacted,
But Slightly More Cost



S4 STATION AVE SITE ALL GRASS FIELDS

Site/Traffic Considerations:
Utilizes Existing Curb Cuts
Long Car Que (Off-street)
Many Fields Away From HS
and Majority of Parking
Major Tree Clearing Req'd

Construction/Phasing:
Minimal Impact To Schools
Limited Field Disturbance
(with new fields built first)

Educational & Community:
Centrally Located, Travel
Equity For Both Towns
Field Proximity To Homes

Cost Considerations:
Less Cost Over Time With
2 Schools Addressed Now

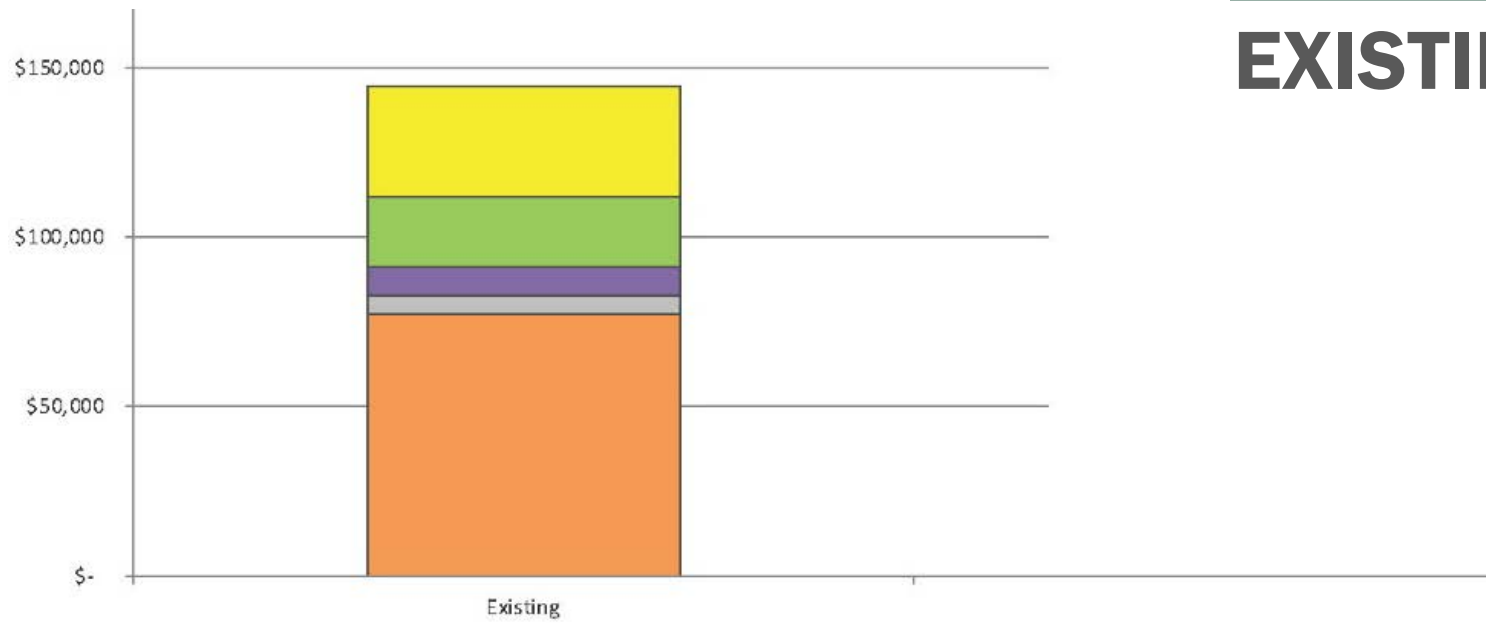


S4 STATION AVE SITE SYNTHETIC FIELDS

Same S4's Pro's/Con's
Except No Fields Req'd
In The N/W Corner

Less Tree Clearing,
Less Homes Impacted,
But Slightly More Cost

EXISTING ENERGY USE



■ Cooling ■ Heat Rejection ■ Heating ■ DHW ■ Fans ■ Pumps ■ Ext Light ■ Misc ■ Int Lights

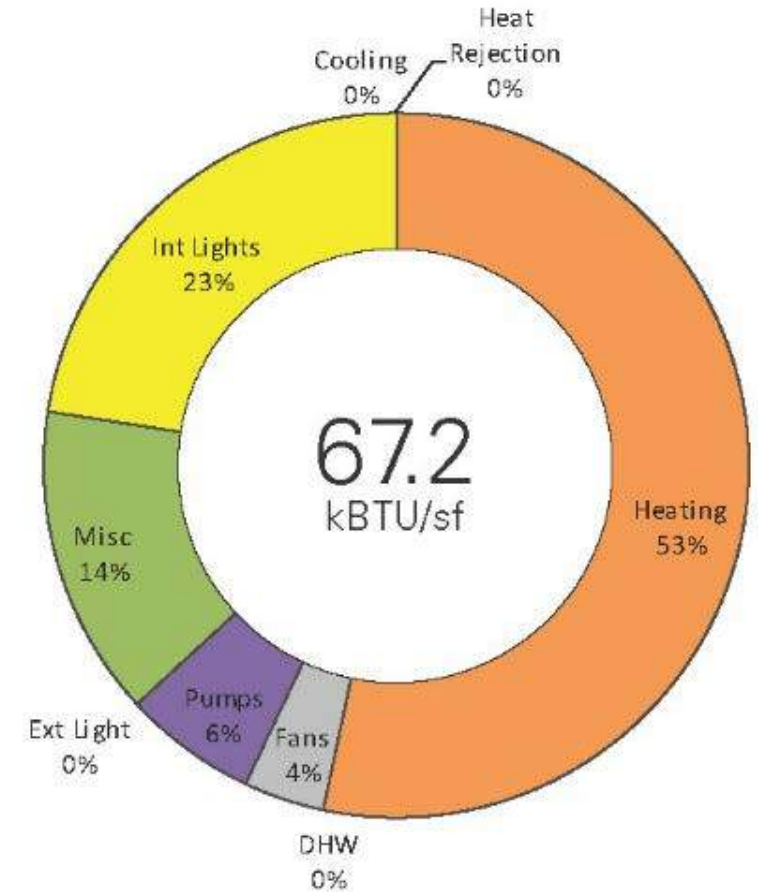
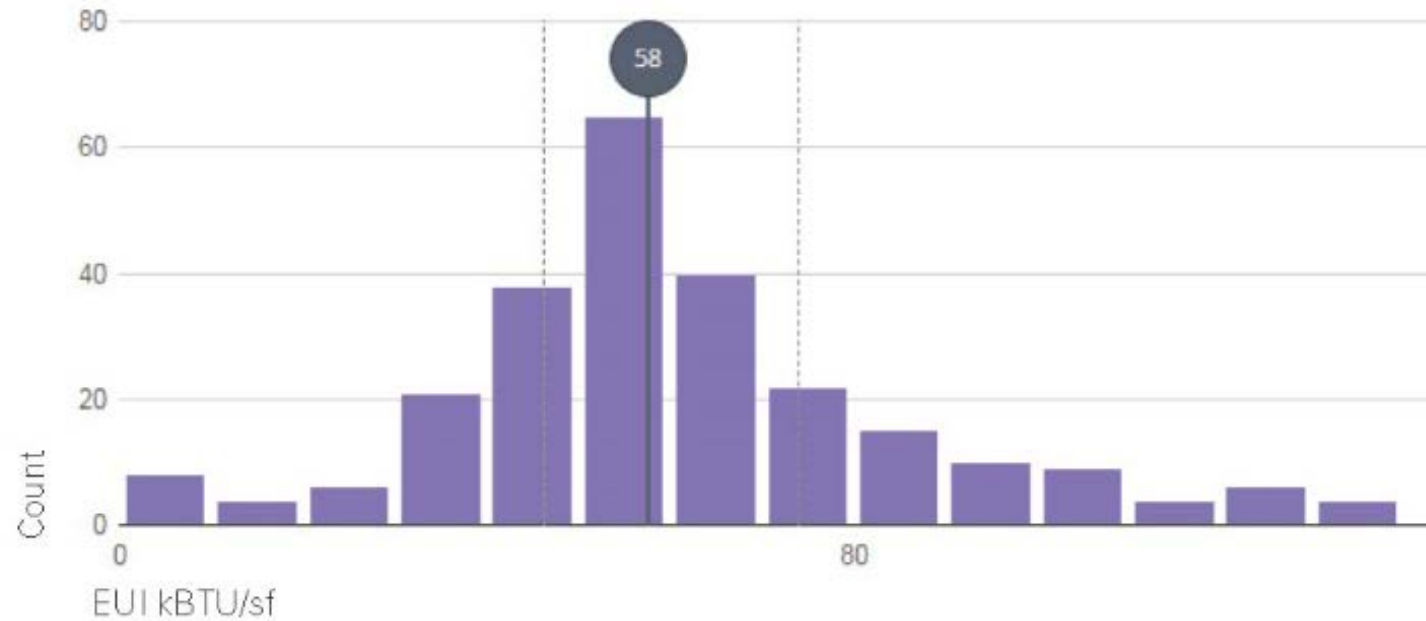
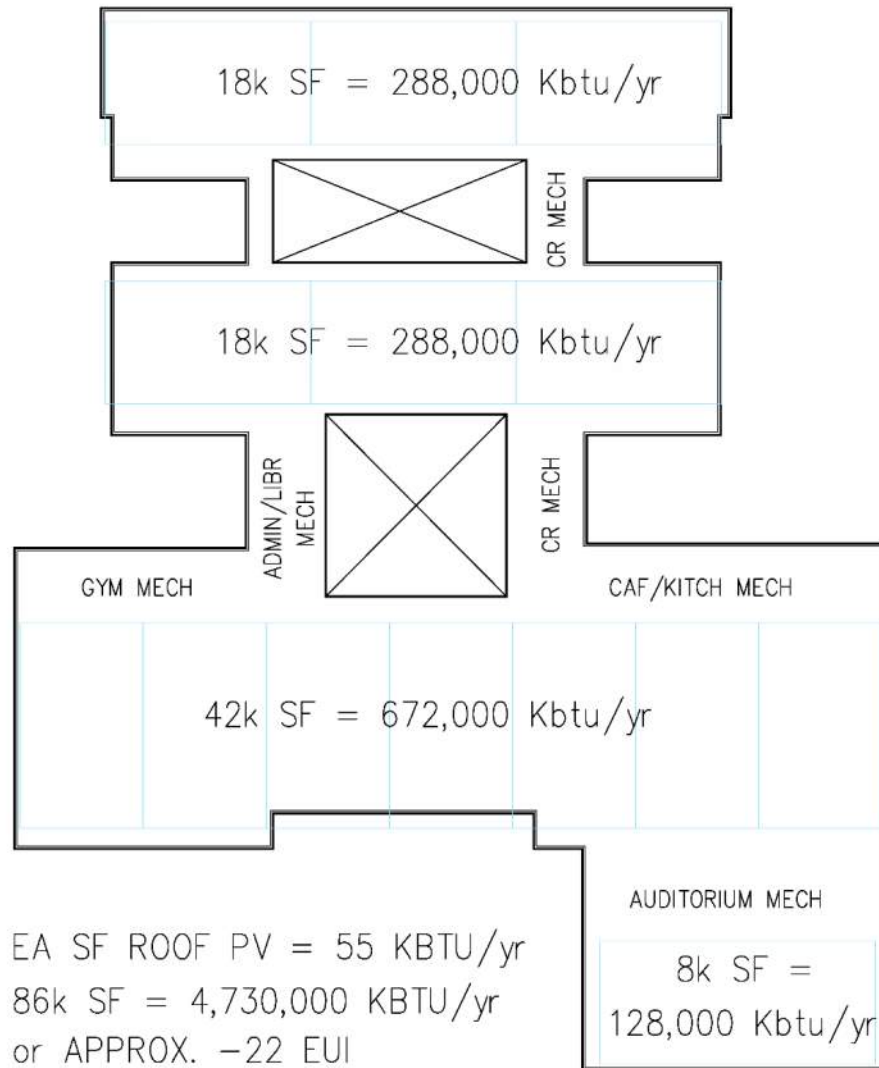
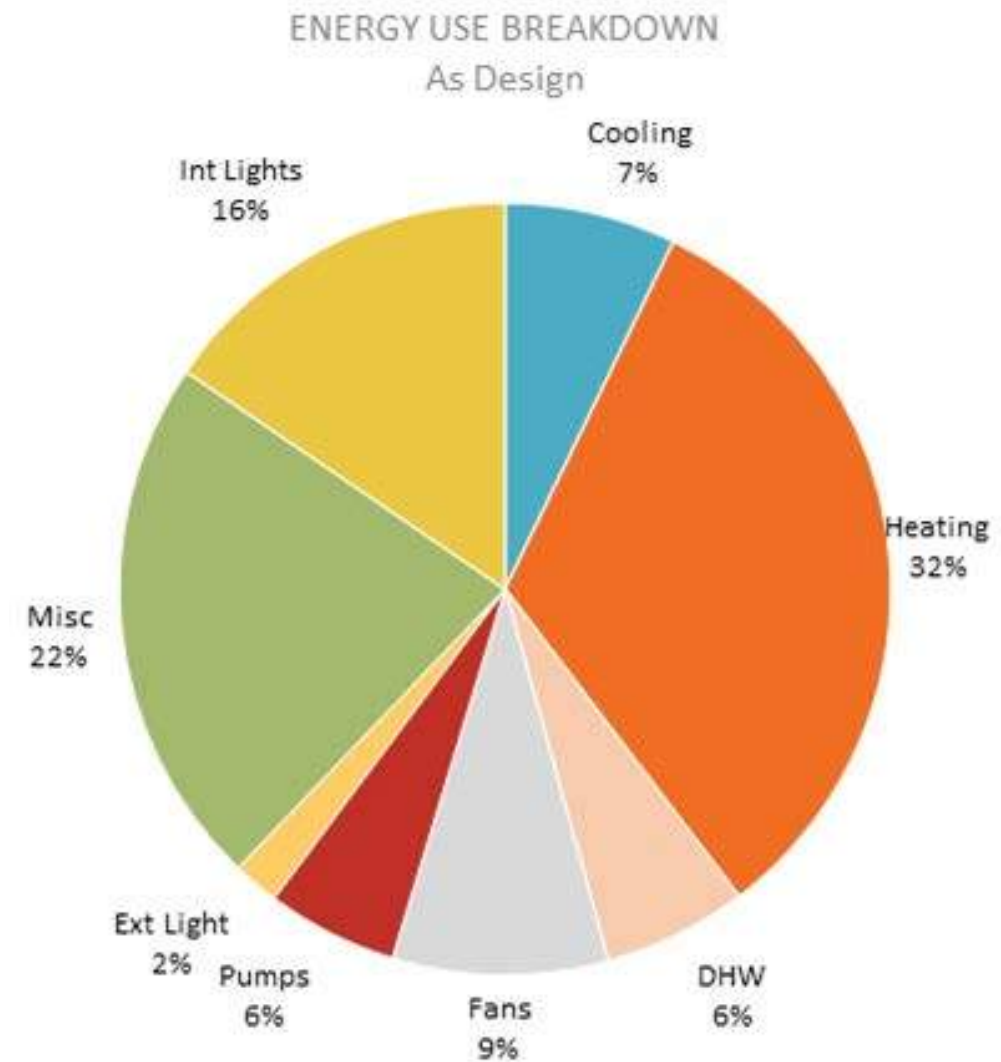


FIG.3. BUILDING PERFORMANCE SURVEY DATA FOR SCHOOLS IN MASSACHUSETT

PRELIMINARY ENERGY MODEL

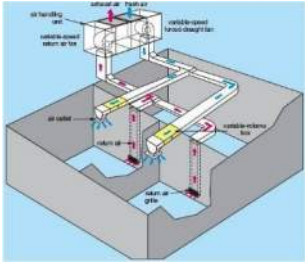


NZE POTENTIAL w/ 36k SF MORE PV or -8 to 10 EUI



Current Plans = 31 EUI given shape/solar orientation, assuming certain systems, envelope & window ratio

OPTIONS UNDER STUDY -MECH



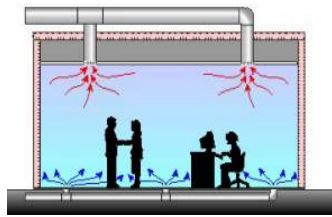
VAV – VARIABLE AIR VOLUME / \$\$

System that supplies air at a constant temperature, varying the air flow to modulate/ control temperature

Cost Effective

Need more floor space for ductwork and equipment and more ceiling space due to increased air requirements

Generally only meets baseline energy requirements



DISPLACEMENT VENTILATION / \$\$\$

Relatively Flat Site, 70 Acre (40 useable, 21 developed) Aquafer-protect + Wetland

Quiet – low maintenance

Superior Air Quality

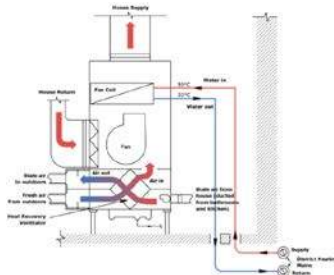
Less velocity equals lower power requirements

Higher Ventilation Effectiveness

Cannot be applied as widely as mixed air systems

Ceiling Heights at a minimum 9 foot

Can add complexity to Duct Work – diffusers more expensive



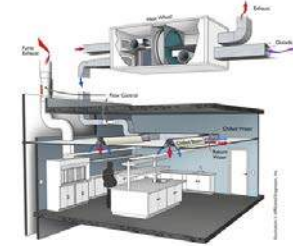
FAN COIL / \$\$

Hot/ cold water come from central plant – air from RTU – units provide heating and cooling to individual spaces or zones

Lower cost option, common and generally understood by trades

Need multiple units to heat and cool areas

Higher Maintenance – more parts, filters, fans



CHILLED BEAM / \$\$\$

Hot / Cold water are produced at central plant – pass thru the beams, air from Central Air Handlers falls or is forced over the beam providing heating and cooling

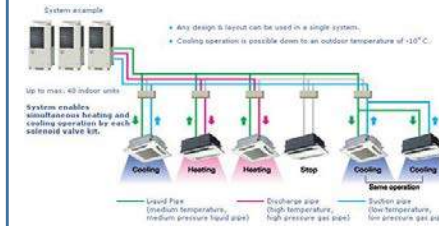
Quiet

Easy Commissioning requirements

Low maintenance – no moving parts and no filters or pans at beam

Improper temp and high humidity may cause condensation

May limit flexibility – a single beam can only serve individual spaces



VRF – VARIABLE REFRIGERANT FLOW / \$\$\$\$

Uses only refrigerant as the transfer medium and an inverter compressor – can provide simultaneous heating and cooling

Efficient – energy savings – save up to 34% in overall energy \$

Highly adjustable – can heat and cool simultaneously, provides high occupant satisfaction

Relative high cost

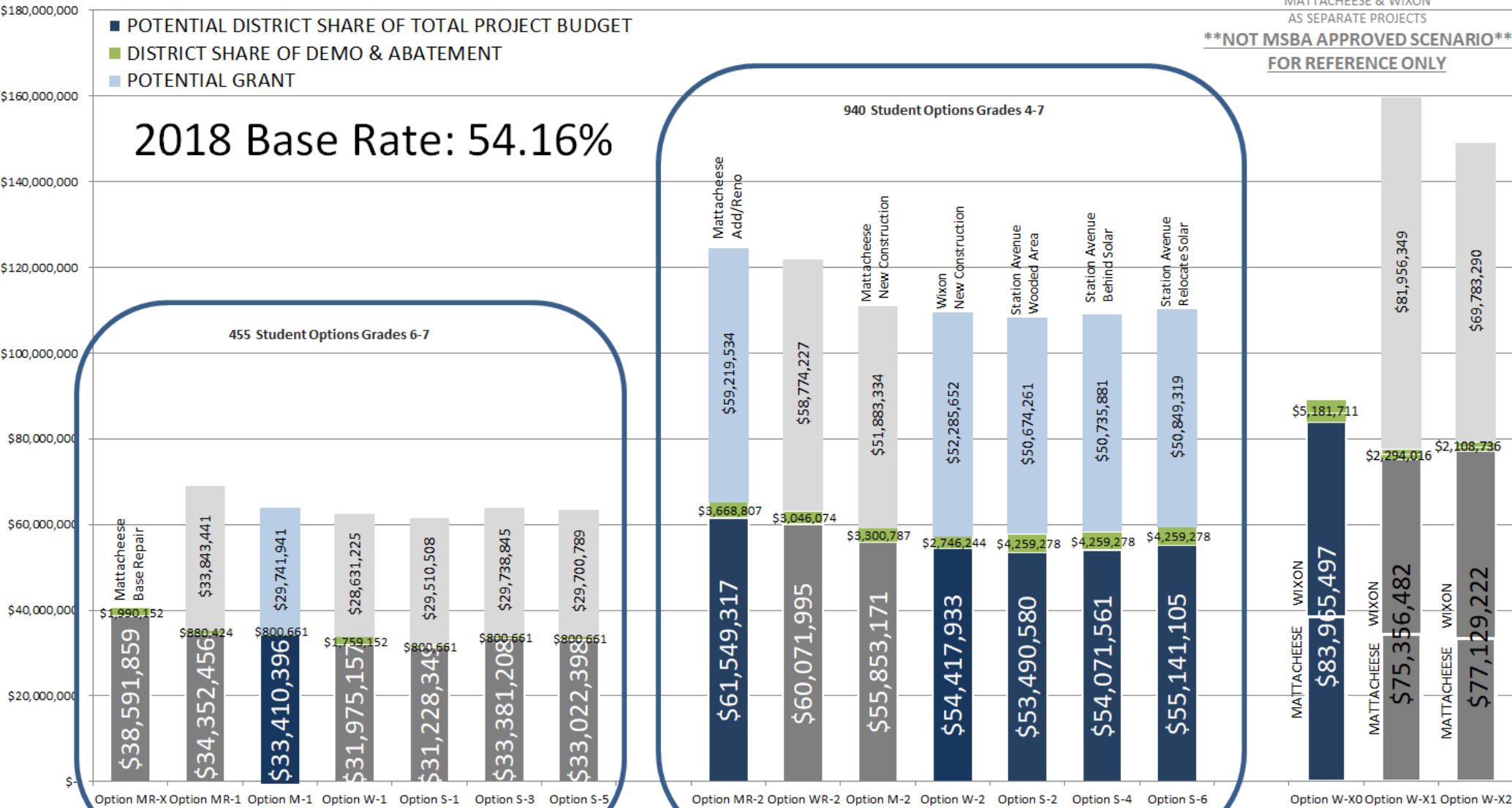
Not ideal for situations that require high outside air

Potential obsolescence of components

Potential issues with installation and repairs

OVERALL COST COMPARISONS (HIGH LEVEL ESTIMATE)

CONCEPTUAL LEVEL COST SCENARIO





**PERKINS —
EASTMAN**

Photo courtesy of TripAdvisor



DENNIS-YARMOUTH SCHOOL PROJECT

ABUTTERS MEETING

February 28, 2018





MASSING STUDIES – EXISTING



MASSING STUDIES – S2



MASSING STUDIES – S4



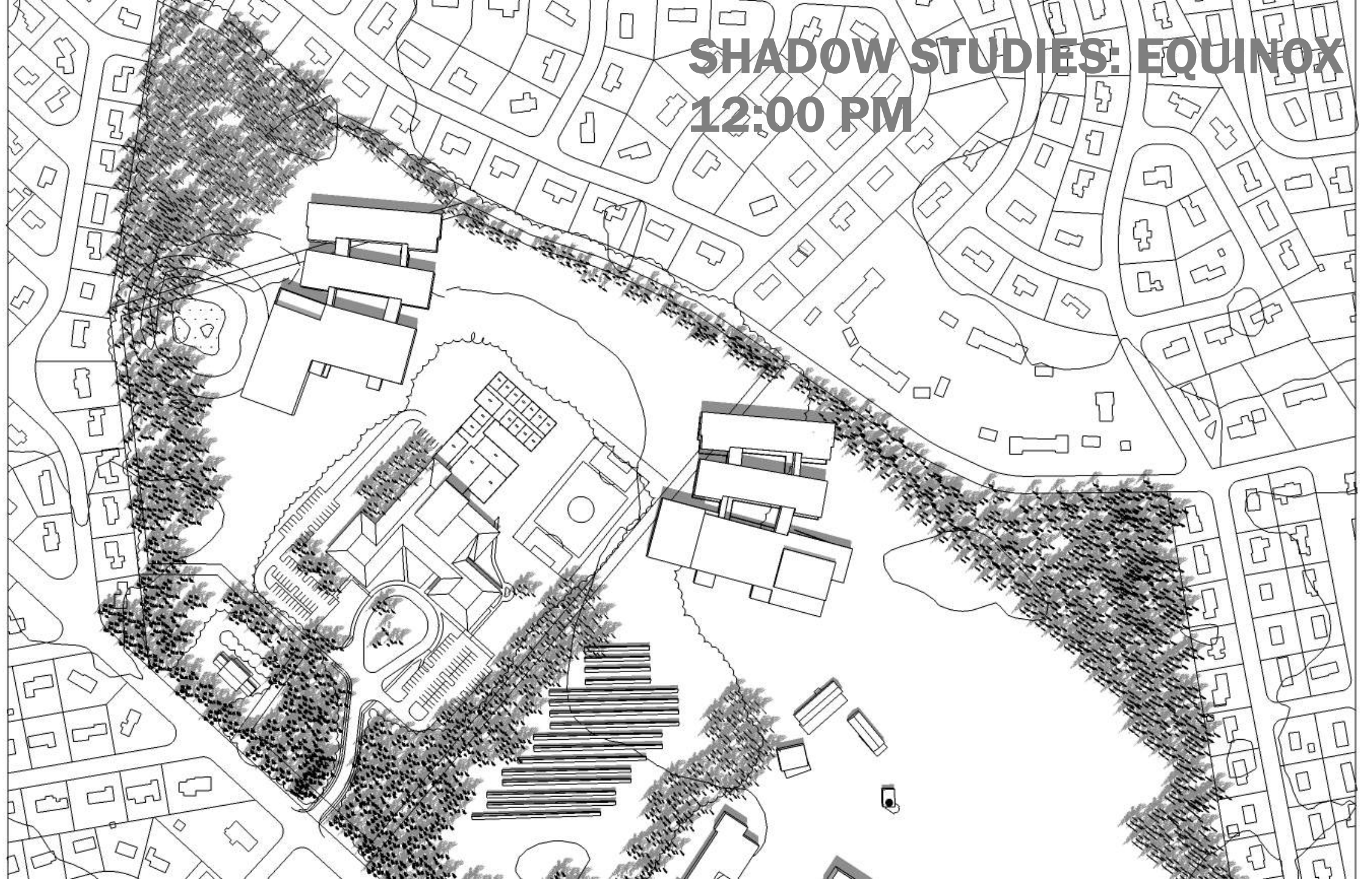
SHADOW STUDIES: EQUINOX

9:00 AM



SHADOW STUDIES: EQUINOX

12:00 PM



SHADOW STUDIES: EQUINOX

3:00 PM



SHADOWS: WINTER SOLSTICE

9:00 AM



SHADOWS: WINTER SOLSTICE 12:00 PM



SHADOWS: WINTER SOLSTICE

3:00 PM

