Design Review Committee/
School Building Committee
Meeting

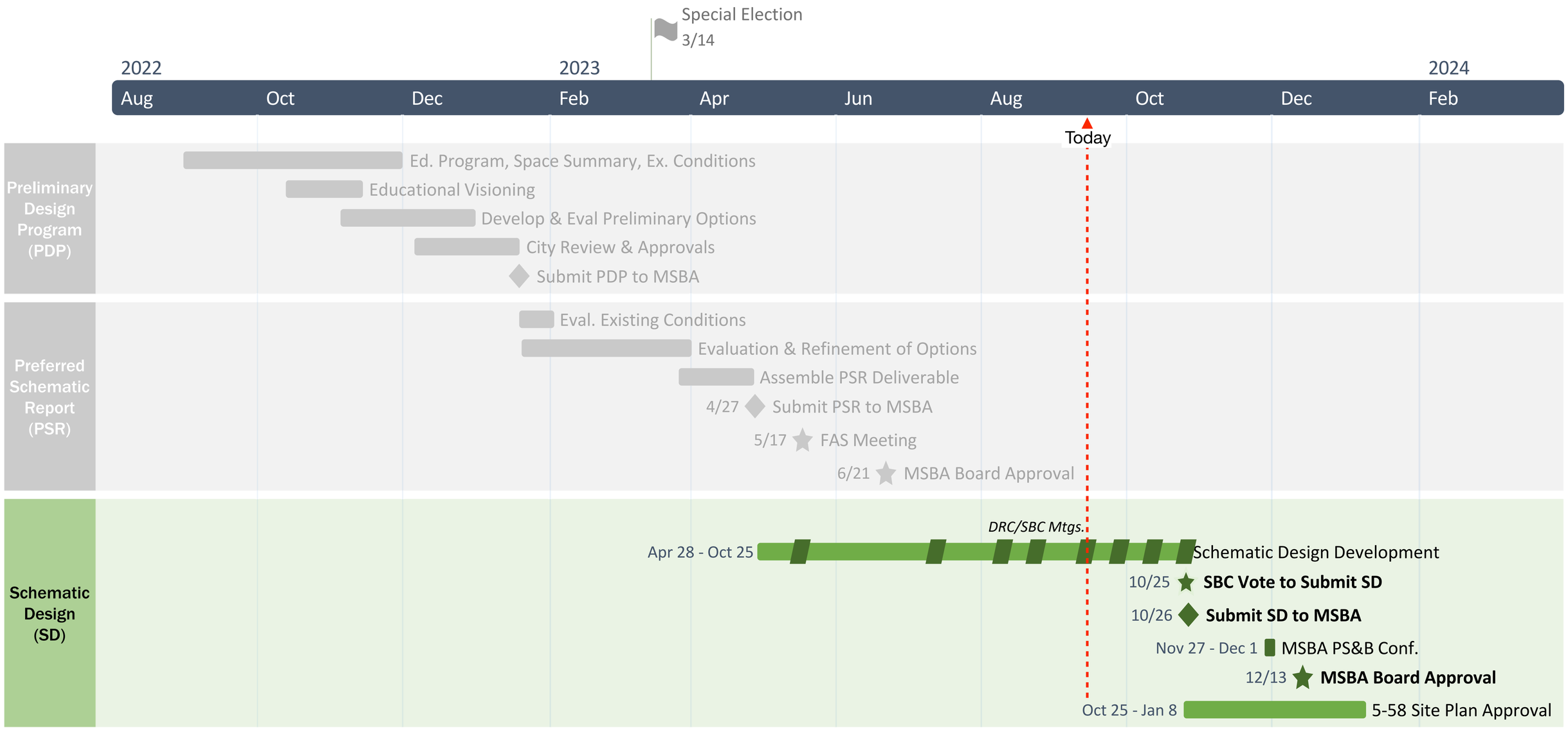
COUNTRYSIDE ELEMENTARY SCHOOL

Newton, MA

DINISCO DESIGN

September 13, 2023

Project Schedule | Milestones



* Anticipated estimated construction Summer 2025 - Summer 2027

Upcoming Meetings

Site Plan Approval DRC/SBC Meeting Schedule

- September 13, 2023: Site Plan + Site Lighting Review, Stormwater Design Review + System Updates
- September 27, 2023: Site + Building Follow Up Review
- October 11, 2023: Project Scope and Cost Review
- October 25, 2023: SBC to approve SD submission to MSBA, DRC to authorize submission of package for 5-58 Site Plan Approval

Schematic Design | Site Plan

- Bus drop off lane located along Dedham St. North
- Parent drop off (Blue Zone) located along Dedham St. East
- Staff parking lot located to the west
- Van drop off lane located at staff parking lot
- Softball practice field located as far to the southeast as possible to maximize play area
- Existing school to remain, operating during construction
- Playground and equipment to be accessible (universal design)
- Playground components include full court basketball (reduced size), wall ball zone, painted asphalt play areas
- Outdoor learning opportunities include raised garden beds, pollinator garden, outdoor classroom

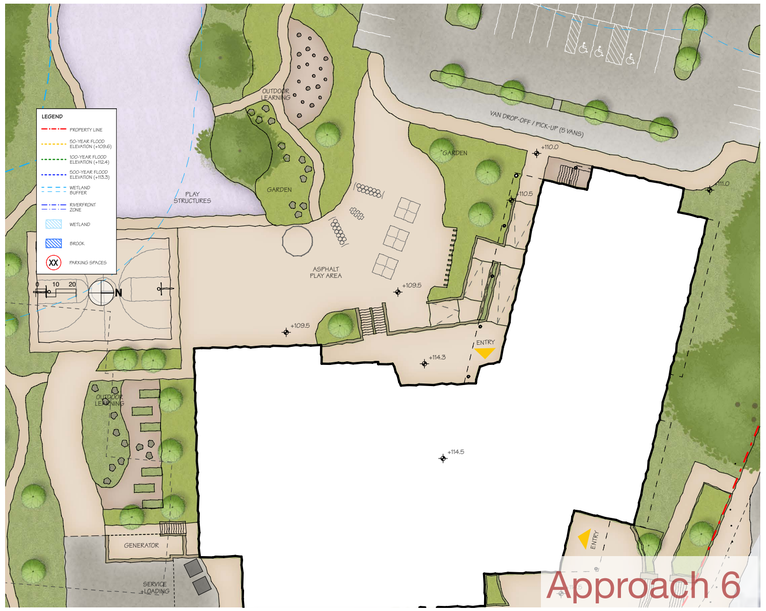
Schematic Design | Site Plan - Playground Ramp Study - Current

- Single ramp below building overhang
- Ramp leads to staff parking, van drop off and asphalt play area
- Oversize stairs allows for separation of up/down movement and leads directly to asphalt play area

Schematic Design | Site Plan - Playground Ramp Studies

Approach 2

Approach 4



Approach 6

Approach 3

Approach 5

Approach 7

Schematic Design | Site Plan - Playground Ramp Study Approach 2

- 2 Ramps at playground entrance - 1 beneath building overhang
- Ramp leads to staff parking, van drop off and asphalt play area
- Secondary ramp leads directly to wall ball area
- Oversize stairs allows for separation of up/ down movement and leads directly to asphalt play area

Schematic Design | Site Plan - Playground Ramp Study Approach 3

- 2 Ramps at playground entrance - 1 beneath building overhang
- Ramp leads to staff parking, van drop off and asphalt play area
- Secondary ramp leads directly to wall ball area
- Oversize stairs allows for separation of up/ down movement and leads directly to asphalt play area

Schematic Design | Site Plan - Playground Ramp Study Approach 4

- Single ramp below building overhang with second short ramp leading directly to playground
- Oversize stairs allows for separation of up/down movement and leads directly to asphalt play area

Schematic Design | Site Plan - Playground Ramp Study Approach 5

- Single ramp below building overhang with second short ramp leading directly to playground
- Stairs with direct access to asphalt play area are eliminated

Schematic Design | Site Plan - Playground Ramp Study Approach 6

- Single ramp below building overhang with second short ramp leading directly to playground
- Oversize stairs allows for separation of up/down movement and leads directly to asphalt play area

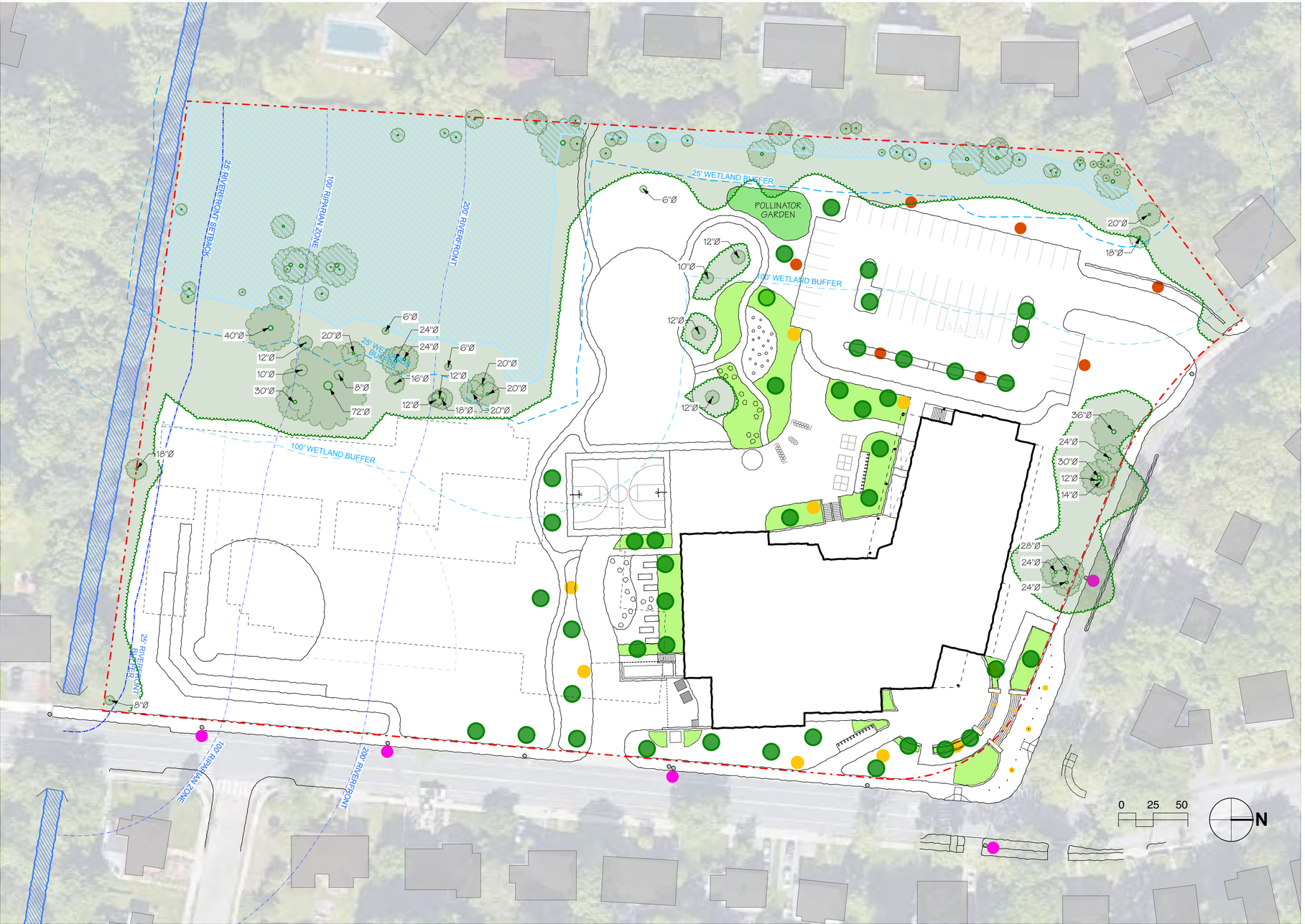
Schematic Design | Site Plan - Playground Ramp Study Approach 7

- Single ramp below building overhang with second short ramp leading directly to playground
- Stairs with direct access to asphalt play area are eliminated

Schematic Design | Tree Survey

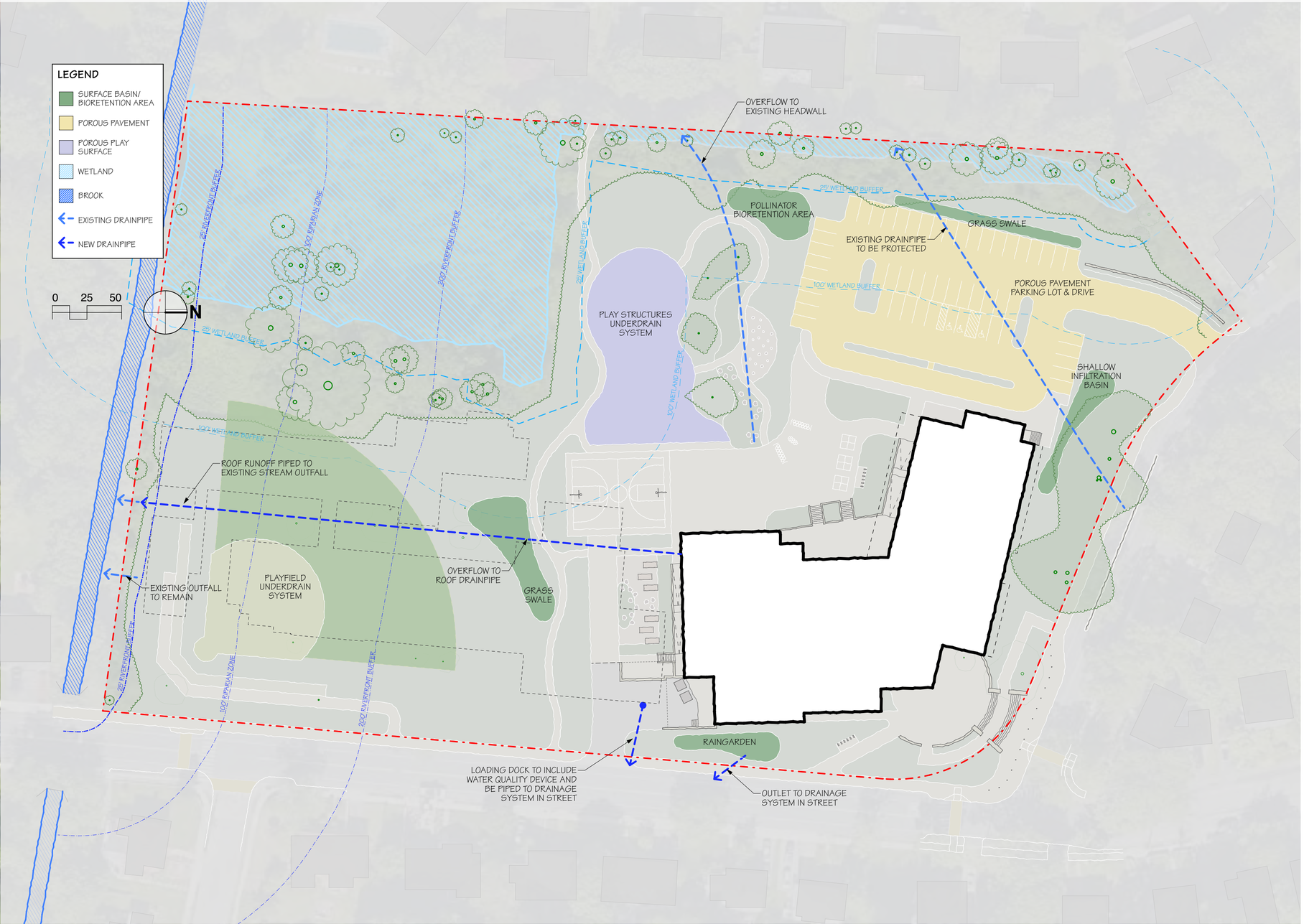
- Existing trees 8” caliper and up: 138” to be removed
- Existing trees 6” caliper and up: increases total caliper inches to 144”
- Priority is to preserve as many existing trees on site as possible
- Proposed building location allows existing mature trees along Dedham Street north to be protected during construction
- New playground is designed around existing playground trees
- New practice softball field location

Schematic Design | Preliminary Site Planting + Lighting Concept



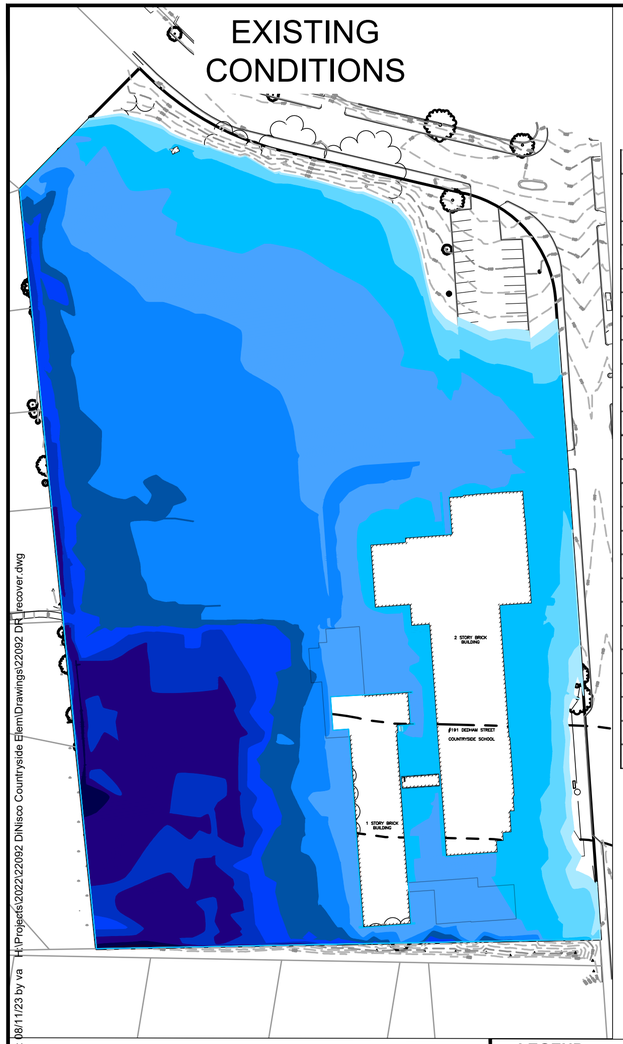
- Pedestrian scaled pole mounted lighting - 12’ to 14’
- Parking lot pole mounted lighting - 16’ to 18’
- Bollard lighting
- Handrail lighting
- Utility pole mounted street lighting

Schematic Design | Preliminary Stormwater Considerations

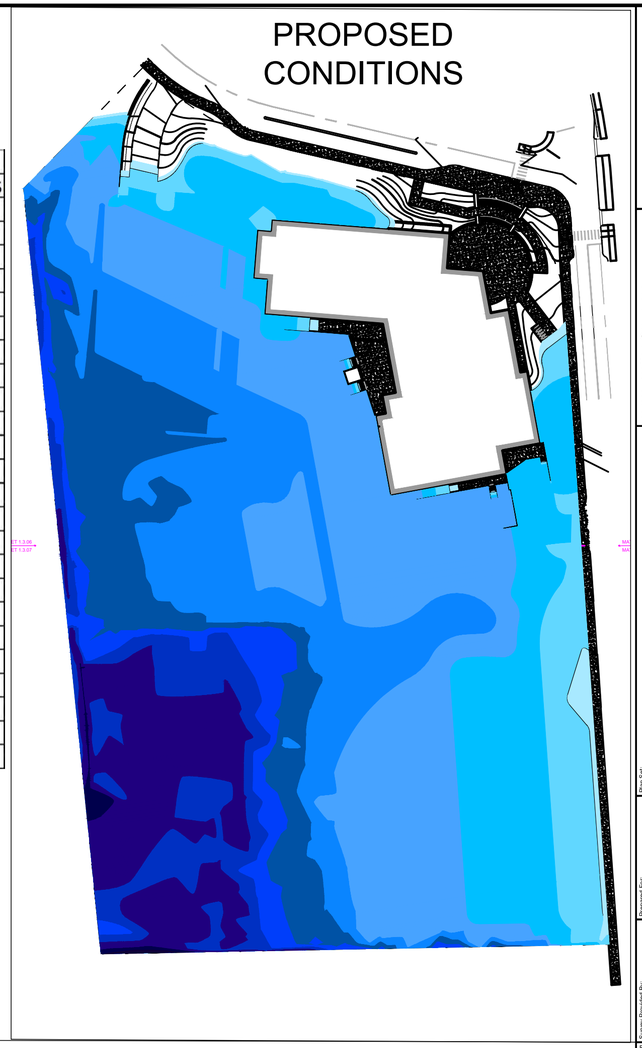


- Design to fully comply with the requirements of the Massachusetts Stormwater Regulations
- Stormwater management components
  - Bioretention areas
  - Shallow infiltration basins + rain garden
  - Porous asphalt parking lot + driveway
  - Permeable rubber play surfaces
- No increase in peak rates of stormwater discharge off site

Schematic Design | Compensatory Flood Storage Comparison



COMPENSATORY FLOOD STORAGE CALCULATIONS				
ELEVATION	EXISITING CONDITIONS		PROPOSED CONDITIONS	
(FT)	AREA (SF)	VOLUME (CF)	AREA (SF)	VOLUME (CF)
103	107		107	
		485		485
104	862		862	
		12,824		12,824
105	24,785		24,785	
		33,535		33,535
106	42,285		42,285	
		48,130		48,130
107	53,974		53,974	
		65,048		68,804
108	76,122		83,633	
		104,206		108,085
109	132,289		132,537	
		164,361		167,446
110	196,432		202,355	
		217,816		221,530
111	239,200		240,704	
		240,637		249,121
112	242,073		257,537	
		100,431		103,648
112.4	260,084		260,704	
TOTAL		987,470		1,013,605



LEGEND

- 102 - 103
- 103 - 104
- 104 - 105
- 105 - 106
- 106 - 107
- 107 - 108
- 108 - 109
- 109 - 110
- 110 - 111
- 111 - 112
- 112 - 112.4

0 100
SCALE IN FEET

Revisions

Rev. | Date | By | Appr. | Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date: AUGUST 2023 | Designed By: VSA | Drawn By: VSA | Checked By: JCB

Plan Set: COUNTRYSIDE ELEMENTARY SCHOOL
191 DEDHAM STREET
NEWTON HIGHLANDS, MASSACHUSETTS

Plan Title: EXISTING VS PROPOSED CONDITIONS
FEMA FLOOD STORAGE MAP

Prepared For:
DiNisco Design
99 Chauncy Street
Boston, MA 02111
Phone: 617-426-8058
Fax: ####

Survey Provided By:
####
####
Phone: ####
Fax: ####
Dwfed: ####

Registration:

Project Number: 22092

Sheet Number: # of #

last modified: 08/11/23 printed: 08/11/23 by va H:\Projects\2022\22092 DiNisco Countryside Elem\Drawings\22092 DR_recover.dwg

Schematic Design | First Floor Plan

Schematic Design | Second Floor Plan

LEGEND
- CORE ACADEMIC SPACES
- SPECIAL EDUCATION
- ART & MUSIC
- HEALTH & PHYS ED
- MEDIA CENTER
- DINING & FOOD SERVICE
- PLATFORM
- MEDICAL
- ADMIN & GUIDANCE
- OTHER / EXTENDED DAY
- CUST, MAINT, & TOILETS
- CIRCULATION

0 20 N

Schematic Design | Third Floor Plan

LEGEND
- CORE ACADEMIC SPACES
- SPECIAL EDUCATION
- ART & MUSIC
- HEALTH & PHYS ED
- MEDIA CENTER
- DINING & FOOD SERVICE
- PLATFORM
- MEDICAL
- ADMIN & GUIDANCE
- OTHER / EXTENDED DAY
- CUST, MAINT, & TOILETS
- CIRCULATION

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Schematic Design | Roof Plan

LEGEND

- CORE ACADEMIC SPACES
- SPECIAL EDUCATION
- ART & MUSIC
- HEALTH & PHYS ED
- MEDIA CENTER
- DINING & FOOD SERVICE
- PLATFORM
- MEDICAL
- ADMIN & GUIDANCE
- OTHER / EXTENDED DAY
- CUST, MAINT, & TOILETS
- CIRCULATION

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Schematic Design | Stair A Study

Option 1 Rev1

Option 1 Rev2

Option 1A

Option 1B

Schematic Design | View of Front Plaza

Schematic Design | View from South

Schematic Design | Approach from South

Schematic Design | View from Playground

Schematic Design | View from Dedham St North

Schematic Design | View from Dedham St North

Schematic Design | View of West Stair

Schematic Design | View westward along Dedham St North

Schematic Design | View eastward from Dedham St North

Schematic Design | View eastward from 136 Dedham St

Schematic Design | View eastward from 136 Dedham St

Schematic Design | Masonry Study Option 1

Schematic Design | Masonry Study Option 1

Schematic Design | Masonry Study Option 2

Schematic Design | Masonry Study Option 2

Schematic Design | Masonry Study Option 3

Schematic Design | Masonry Study Option 3

Building Systems | HVAC Systems for LCCA

	Central Plant	Air Distribution Side
VRF	Air source VRF outdoor condensing units	ERV with air source VRF fan coil units
ASHP+VAV	Air source heat pump with electric boiler backup	VAV with reheat
ASHP+ACB	Air source heat pump with electric boiler backup	ERV with chilled beams
ASHP+FCU	Air source heat pump with electric boiler backup	ERV with fan coil units
GSHP+VAV	Ground source heat pump	VAV with reheat
GSHP+ACB	Ground source heat pump	ERV with chilled beams
GSHP+FCU	Ground source heat pump	ERV with fan coil units
GSHP+VRF	Ground source heat pump	ERV with water source VRF fan coil units

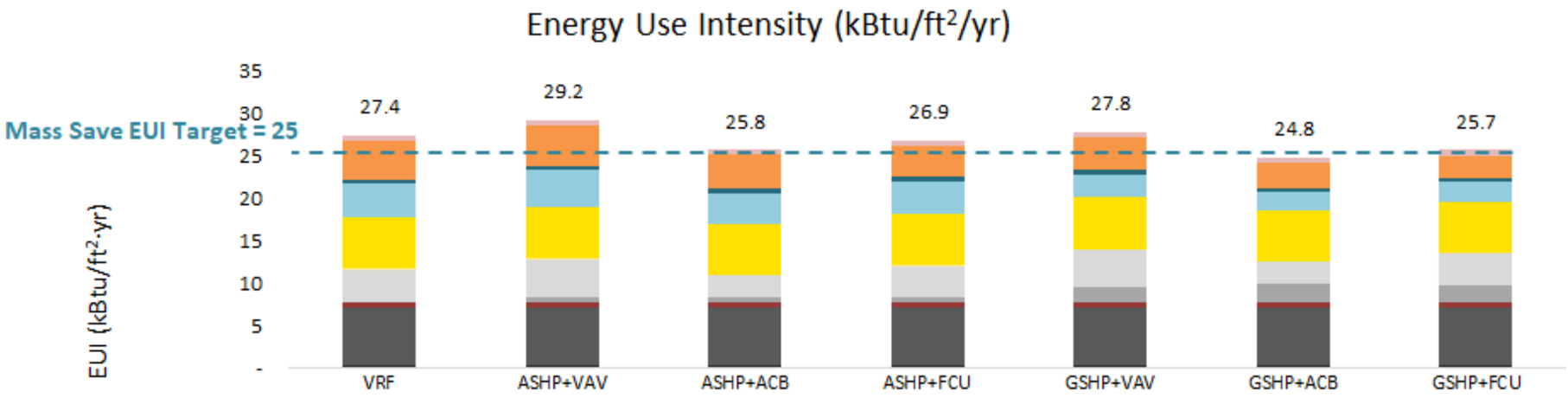
Building Systems | Anticipated Use Schedule

Proposed Usage Schedule *

Space Description	"SCHOOL USE" SCHOOL YEAR Monday - Friday 45 Weeks	"SCHOOL USE" SUMMER BREAK Monday - Friday 6 Weeks	"ANTICIPATED USE" (Not School Use) SCHOOL YEAR Last full week in August to End of June: Monday - Friday 45 Weeks (see notes below)	Duration	Saturday 32 Weeks (see notes below)	Duration	Sunday (see notes below)	Duration	SUMMER BREAK July to August: Monday - Friday	Duration	Saturday	Sunday	VACATION WEEKS: Winter Vacation	February Vacation	April Vacation
FIRST FLOOR															
Administration	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	- to -		- to -		- to -		- to -		- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
Gymnasium	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	6:00 PM to 10:00 PM	42 wks	7:00 AM to 3:00 - 5:00 PM	18 wks	8:00 AM to 2:00 PM	40 wks	6:00 PM to 10:00 PM	4 wks	- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
1st Floor Toilets Serving Gym	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	6:00 PM to 10:00 PM	42 wks	7:00 AM to 3:00 - 5:00 PM	18 wks	8:00 AM to 2:00 PM	40 wks	- to -		- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
1st Floor Corridors	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	6:00 PM to 10:00 PM	42 wks	7:00 AM to 3:00 - 5:00 PM	18 wks	8:00 AM to 2:00 PM	40 wks	- to -		- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
Library	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	- to -		- to -		~~7:00 AM to 3:00 – 5:00 PM~~		- to -		- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
Cafeteria	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	6:00 PM to 8:00 PM	16 wks	- to -		~~7:00 AM to 3:00 – 5:00 PM~~		8:00 AM to 5:00 PM	7 wks	- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
Kitchen	5:30 AM to 3:45 PM	- to -	- to -		- to -		- to -		- to -		- to -	- to -	to	to	to
Kindergarten	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	- to -		- to -		~~7:00 AM to 3:00 – 5:00 PM~~		- to -		- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
SECOND FLOOR															
Classrooms	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	- to -		- to -		8:00 AM to 2:00 PM	12 wks	- to -		- to -	- to -	to	6:00 AM to 6:00 PM	6:00 AM to 6:00 PM
2nd Floor Toilets							8:00 AM 2:00 PM	12 wks							
2nd Floor Corridors							8:00 AM 2:00 PM	12 wks							
THIRD FLOOR															
Classrooms	5:30 AM to 6:00 PM	6:00 AM to 3:00 PM	- to -		- to -		- to -		- to -		- to -	- to -	to	to	to

*Based on updated schedule provided to TT on 8/25/2023

Building Systems | LCCA Energy Use Intensity



	VRF	ASHP+VAV	ASHP+ACB	ASHP+FCU	GSHP+VAV	GSHP+ACB	GSHP+FCU
Domestic Hot Water Fossil Fuel	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water Electricity	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Space Heating Fossil Fuel	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Space Heating Electricity	4.6	4.7	4.0	3.7	3.8	3.0	2.6
Refrigeration	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Space Cooling Electricity	3.9	4.4	3.5	3.8	2.7	2.0	2.3
Heat Rejection	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Internal Lighting	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Exterior Lighting	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Vent Fans	3.8	4.5	2.5	3.7	4.5	2.5	3.7
Pumps	0.0	0.5	0.5	0.5	1.7	2.1	2.0
Misc Equip Fossil Fuel	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Misc Equip	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Elevators	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Energy	27.4	29.2	25.8	26.9	27.8	24.8	25.7
Total Energy Cost	$112,346	$119,712	$105,346	$109,960	$113,021	$101,431	$105,070

Thornton Tomasetti

Building Systems | LCCA Summary

System Type	EUI (kBtu/ft^2/yr)	First Cost Before Incentives ($)	- MassSave Construction Incentives[1] ($)	- MassSave Occupancy Incentives[2] ($)	- IRA Tax Credits[3] ($)	+ Annual Operating Cost ($)	+ Replacement Cost *Net Present Cost* ($)	= 50 yr Life Cycle Cost *Net Present Cost* ($)	= Relative LCC compared to VRF *Net Present Cost* ($)
VRF	27.4	$6,912,781	$320,281	$0	$0	$112,346	$20,592,929	$35,465,788	$0
ASHP+VAV	29.2	$8,468,460	$207,369	$0	$0	$119,712	$19,548,061	$36,632,416	$1,166,628
ASHP+ACB	25.8	$9,294,611	$244,281	$0	$0	$105,346	$21,455,097	$38,269,857	$2,804,069
ASHP+FCU	26.9	$9,144,807	$244,281	$0	$0	$109,960	$21,109,298	$38,114,325	$2,648,537
GSHP+VAV	27.8	$12,285,585	$947,281	$0	$3,685,676	$113,021	$16,490,570	$32,473,312	-$2,992,476
GSHP+ACB	24.8	$13,100,156	$1,002,650	$110,738	$3,930,047	$101,431	$18,076,778	$33,609,379	-$1,856,409
GSHP+FCU	25.7	$12,962,645	$947,281	$0	$3,888,794	$105,070	$17,809,004	$33,679,662	-$1,786,126

1. ASHP+ACB, GSHP+ACB and GSHP+FCU: Pathway 1 ($2/ft^2 + HP adder). VRF, ASHP+FCU and GSHP+VAV: Pathway 2 ($1.25/ft^2 + HP adder). ASHP+VAV: Pathway 2 ($0.75/ft^2 + HP adder).
2. $1.25/ft^2 for post occupancy if measured EUI meets target.
3. The 30% Inflation Reduction Act (IRA) federal tax credit for geothermal is an approximation. Newton will need to work with a tax attorney to confirm and secure the federal tax credits.
4. Incentives and EUI are based on an SD conditioned floor area of 73,825 ft^2.
5. Maintenance cost assumed to be equal in all options (cost neutral).

Building Systems | Energy Incentives - Tier 1

LCCA Assumptions

- Study period: 50 years
- Escalation rate: 5.5%
- Discount rate: 3.8%
- GSHP well life of 50 years

- MassSave Incentives:

K-12 Schools	Site EUI Range	Incentives				
		Payable at end of Construction		Payable at end of 1 yr. post occupancy		
		Construction Incentive $/sf	Heat Pump Adder*	Post Occ. Inc. $/sf	Adder for getting under ZNE EUI target	Certification Incentive
Tier 2 (high schools only)	26-29	$1.50	Air Source Heat Pumps: $800/ton	$ 1.50	Not applicable	$3,000
Tier 1 - Net Zero Level (all Schools)	25 or less	$2.00	Variable Refrigerant Flow (VRF): $1200/ton Ground Source Heat Pumps: $4500/ton		$0.05/ EUI point reduction/sf	

Building Systems | Energy Incentives - Tier 2

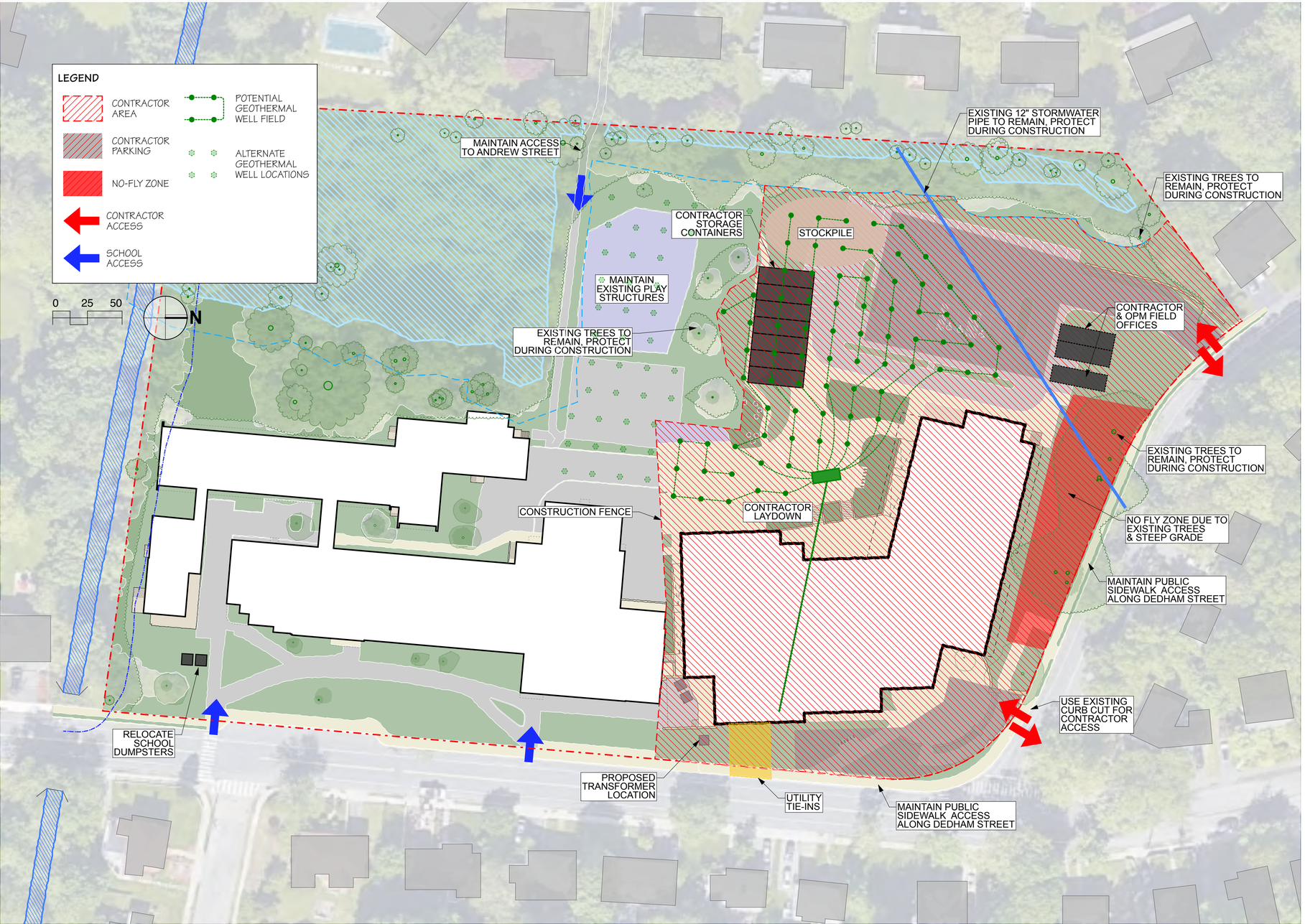
MassSave Incentives

1. Participating project teams commit to setting an EUI target in early design (at minimum, a 5-15% EUI reduction from the Mass Save baseline per Table 1 below) and working toward it throughout the remainder of design. Customers also commit to providing design documents to the Mass Save Sponsors early in design and to providing drawings at mid design and at final design.

Table 1: EUI Reduction Incentive Tiers

Path 2: EUI Reduction Incentive Tiers					
	Incentive Rate	**Heat Pump Adder***	**All sectors other than office/labs**	**Office**	**Lab/office**
Tier 4	$0.35/sf	Air Source Heat Pumps: $800/ton Variable Refrigerant Flow (VRF): $1200/ton Ground Source Heat Pumps: $4500/ton”	10%-15%	5%-10%	15%-20%
Tier 3	$0.50/sf		15%-20%	10%-15%	20%-25%
Tier 2	$0.75/sf		20%-25%	15%-20%	25-30%
Tier 1	$1.25/sf		25% and above	20% and above	30% and above

Building Systems | GSHP - Conceptual Well Layout



- Approximately 76 wells - 8 circuits
- Potential future PV canopy - footing locations to be coordinated with well locations
- Well field to be completed prior to completion of new school
- Construction of well field to be closely coordinated with site activities
- Alternative well locations would impact use of existing playground and paved play areas

Meetings + Milestones

Schematic Design

- Upcoming Meetings:
  - Public Safety + Security Review

- SD Submission to MSBA - October 26, 2023

Previous Meetings:

- Conservation Commission Prelim Meeting: August 17, 2023
- Historic Commission Meeting: August 24, 2023
- Technology Review: August 30, 2023

Site Plan Approval Schedule of Meetings

- DRC/SBC Meetings:
  - September 13, 2023: Site Plan + Site Lighting Review, Stormwater Design Review + Sustainability Updates
  - September 27, 2023: Site + Building Follow Up Review
  - October 11, 2023: Project Scope and Cost Review
  - October 25, 2023: SBC to approve SD submission to MSBA, DRC to authorize submission of package for 5-58 Site Plan Approval

- DRT Meeting: TBD - Late Sept/Early October
- Public Facilities + School Committee Meeting: TBD - Mid Oct

Design Review Committee/
School Building Committee
Meeting

COUNTRYSIDE ELEMENTARY SCHOOL

Newton, MA

DINISCO DESIGN

September 13, 2023