

Bristol Warren Regional School District

RIDE Necessity of School Construction

PMA Consultants | PERKINS EASTMAN

COMMUNITY FORUM MEETING | 11.01.2023

YOUR OPM AND DESIGN TEAM



PMA Consultants

Est. 1971

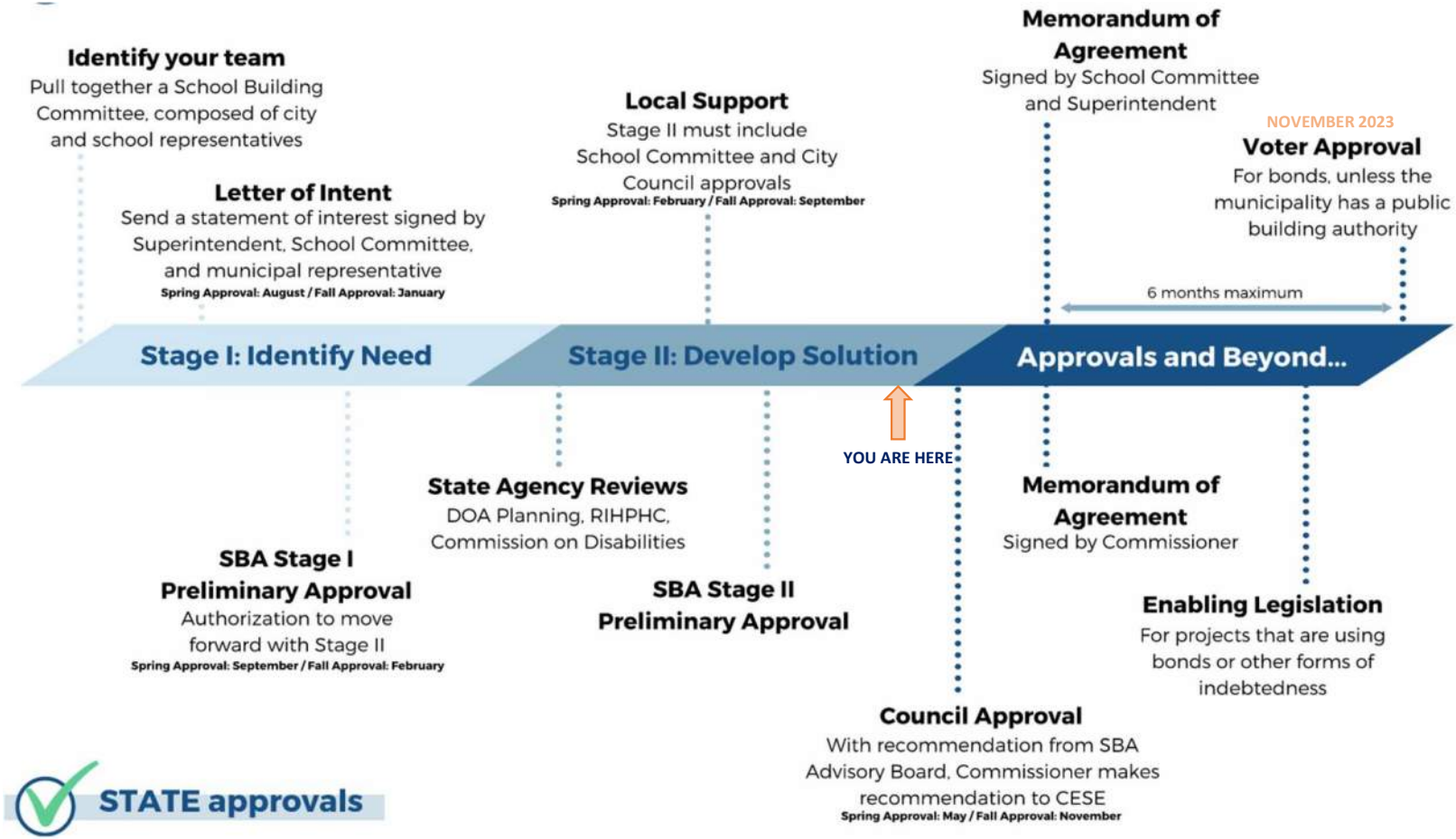




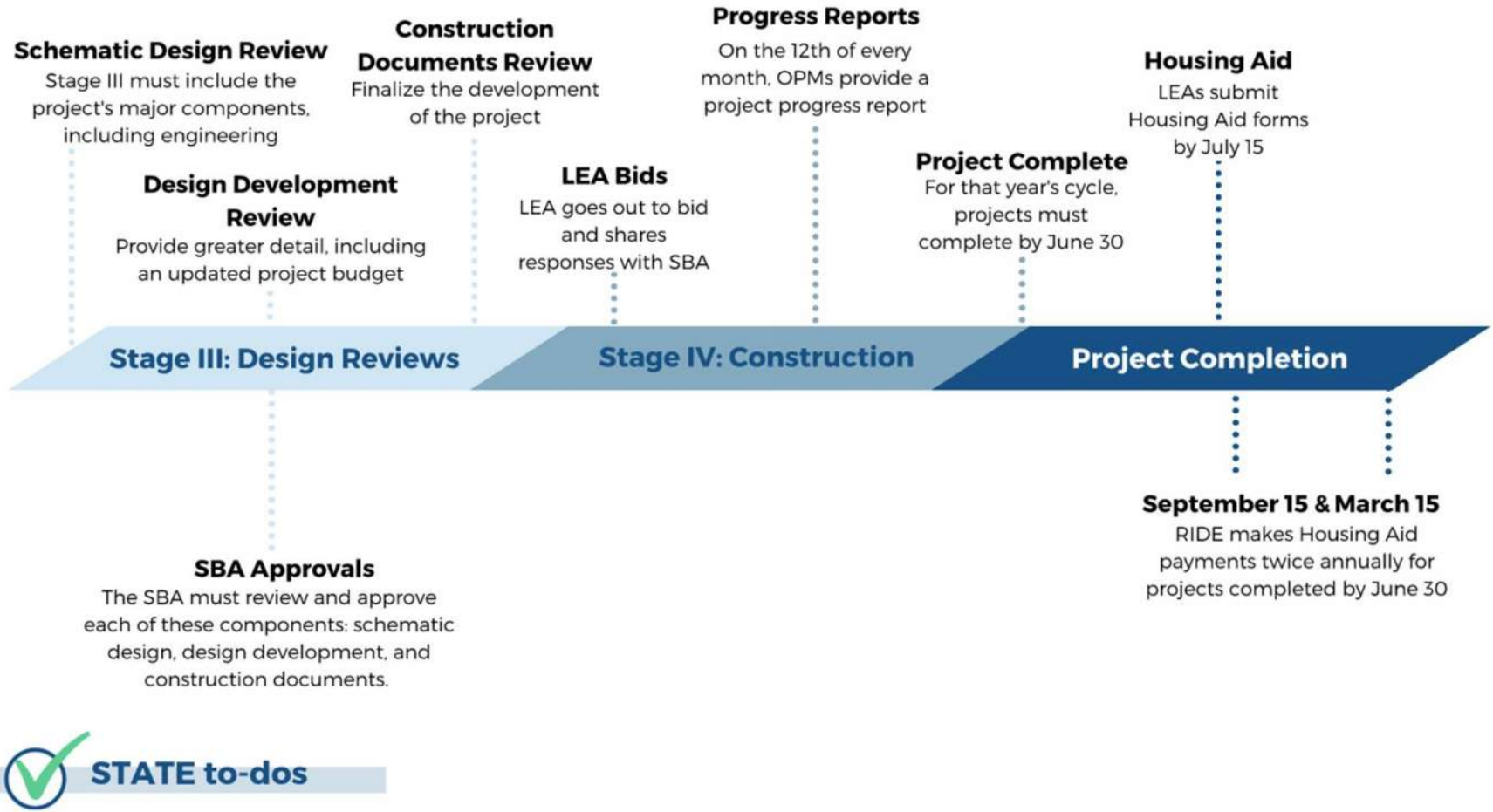
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RIDE PROCESS OVERVIEW



RIDE PROCESS OVERVIEW



STATE to-dos

RIDE STAGE I RECAP

Building Repair Needs

The Colliers inspection teams identified almost 134 individual projects related to maintenance repair and regulatory issues across BWRSD's Six (6) school facilities, Seven (7) total buildings separating Colt and Andrews buildings. The identified cost for the repair of these deferred maintenance projects is estimated to be $28.6 million. Each project was assigned a priority based upon its relative urgency of need as judged by the Colliers inspection team.

	% OF TOTAL
Priority 1 – High Priority *Projects address issues of asset protection, quality of space, physical environments or regulatory concern.*	67.1%
Priority 2 – Important *Projects are not imminent in nature but do improve the quality of the Bristol-Warren schools' environment, both administratively and publicly.*	27.3%
Priority 3 – Deferrable *Projects are recognized for the impending nature of their existence. However, at this time, these issues can be deferred until a later date.*	5.6%
Total Facilities Needs	100.0%

Priority 1: High Priority

Priority 1 projects address issues of asset protection, quality of space, physical environments, or regulatory concern. Priority 1 projects should be addressed in the next 1-2 years.

Priority 2: Important

Priority 2 projects are not imminent in nature but do improve the quality of the Bristol-Warren schools' environment, both administratively and publicly. Priority 2 projects should be addressed in the next 3-5 years.

Priority 3: Deferrable

Priority 3 projects are recognized for the impending nature of their existence. However, at this time, these issues can be deferred until a later date. Priority 3 projects should be addressed in the next 5-10 years and beyond.

RIDE Priority Level 1 – Mission Critical Concerns

Deficiencies or conditions that may directly affect the school's ability to remain open or deliver the educational curriculum. These deficiencies typically relate to building safety, code compliance, severely damaged or failing building components, and other items that require near-term correction. An example of a Priority 1 deficiency is a fire alarm system replacement.

RIDE Priority Level 2: Indirect Impact to Educational Mission

Items that may progress to a Priority 1 item if not addressed in the near term. Examples of Priority 2 deficiencies include inadequate roofing that could cause deterioration of integral building systems, and conditions affecting building envelopes, such as roof and window replacements.

RIDE Priority Level 3: Short-Term Conditions

Deficiencies that are necessary to the school's mission but may not require immediate attention. These items should be considered necessary improvements required to maximize facility efficiency and usefulness. Examples of Priority 3 items include site improvements and plumbing deficiencies.

RIDE Priority Level 4 – Long-Term Requirements

Items or systems that may be considered improvements to the instructional environment. The improvements may be aesthetic or provide greater functionality. Examples include cabinets, finishes, paving, removal of abandoned equipment, and educational accommodations associated with special programs.

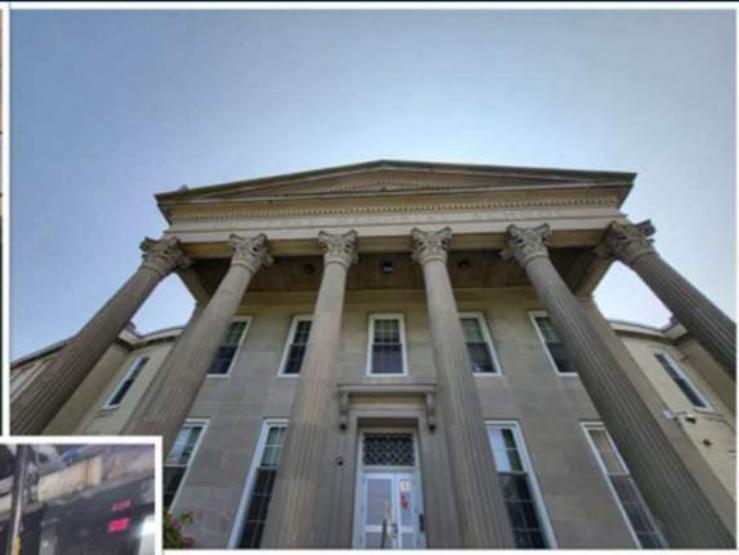
RIDE Priority Level 5 – Enhancements

Deficiencies aesthetic in nature or considered enhancements. Typical deficiencies in this priority include repainting, re- carpeting, improved signage, or other improvements to the facility environment. These items may be optional but are generally included under a comprehensive renovation project plan.

EXISTING CONDITIONS – BUILDING TOURS MAY 22ND





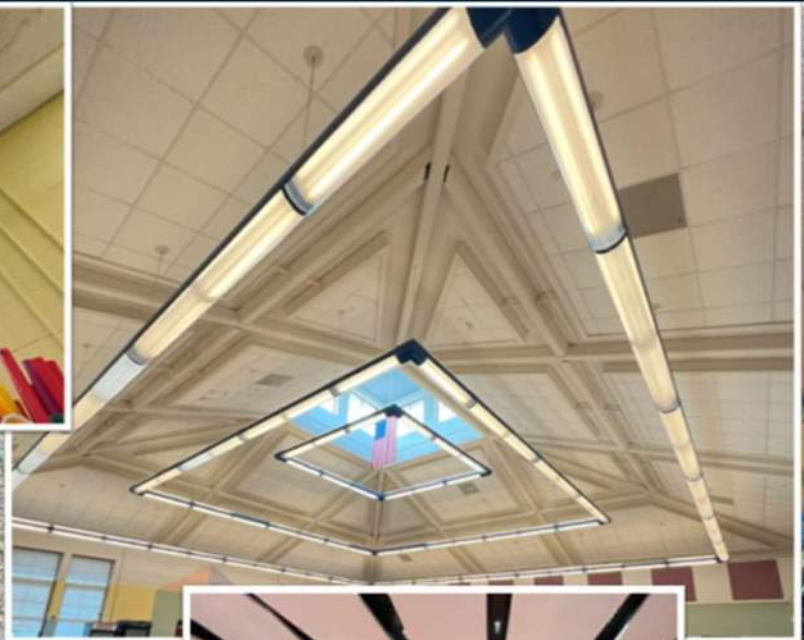




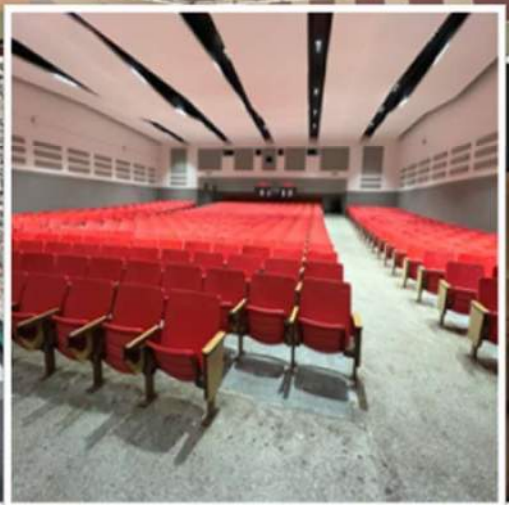


EXISTING CONDITIONS – BUILDING TOURS MAY 23RD













Site Selection

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BWRSD SITE ASSESSMENT

27 Potential 7+ Acre Town Owned Sites Identified In Bristol & Warren – Reviewed on 6/15/23
2 Remain for Further Consideration on 6/29/23

BWRSD Potential Building Sites

Address	Vacant/Non Vacant	Acreage	Ownership	Site Notes	Flaw
Asylum Rd, Bristol	Non Vacant	27.15	Town of Bristol	Looks like this property is being used as a town park with baseball fields, soccer fields, skatepark, tennis courts, playgrounds, beach access and parking lots.	Park
Metacom Ave, Bristol	Vacant	13.41	Town of Bristol	Conservation area between Metacom Ave and Sachem Road. Appears to be a conservation area with walking trails.	Conservation land/Wetlands
Hopeworth Ave, Bristol	Vacant	7	Town of Bristol	Wetlands.	Wetlands
1014 Hope Street, Bristol	Non Vacant	11	Town of Bristol	Bristol Housing Authority housing, no developable land.	Already Housing
6 Minturn Farm Road, Bristol	Non Vacant	91	Town of Bristol	Large land area including the Bristol Transfer Station. Some wetland impact here as well but does not look like it is easily accessible unless from transfer station entrance. Our best guess is that the area is a capped dump.	Access/Wetlands/Dump
220 High Street, Bristol	Non Vacant	7.08	Town of Bristol	Looks like this property is being used as a town park with baseball fields, tennis courts, basketball courts and a playground. There is also the Byfield School and the Walley School located on this property. There is also a church located on this property.	Park
Naomi Street, Bristol	Vacant	13.2	Town of Bristol	This property is almost entirely wetlands.	Wetlands
Chestnut Street, Bristol	Vacant	19.37	Town of Bristol	Lot Across from high school. Mostly wetlands, doesn't seem like there is anywhere to put a school.	Wetlands
Gooding Ave, Bristol	Vacant	14.7	Town of Bristol	Entirely wetlands.	Wetlands
Asylum Rd, Bristol	Vacant	11.9	Town of Bristol	Lot behind and next to Quinta Gamelin Community Center. Part of the lot is [illegible] and the [illegible] probably not big enough for a high school with the cemetery located [illegible]	Cemetary
Elmwood Drive, Bristol	Vacant	8.25	Town of Bristol	Lot is in the back of a residential neighborhood. Access to [illegible] Lot. No wetland issues on property but there are some wetlands in the [illegible]. Not easily accessible.	Access
Hopeworth Ave, Bristol	Vacant	15.51	Town of Bristol	[illegible] wetlands. Across from other Hopeworth site.	Wetlands
San Francisco Street, Bristol	Vacant	15	Town of Bristol	Mostly wetlands and not easily accessible. The site is directly below Metacom Ave potential site.	Wetlands/Access
Roosevelt Drive, Bristol	Vacant	19.59	Town of Bristol	The site has a small amount of wetlands. At the end of a neighborhood so access would be an issue. Also is next to the hopeworth potential site.	Access
Wood Street, Bristol	Vacant	7	Town of Bristol	Land is adjacent to the sewer treatment facility. Mostly wetlands. Flood Zone Issues.	Wetlands/Flood zone
36 Asylum Rd, Warren	Non Vacant	15	Town of Warren	Currently a park with some baseball fields, abutt's to Hugh Cole. Some wetlands on about half the site.	Park
28 Asylum Road, Warren	Non Vacant	15.8	Town of Warren	Large land area where the sports fields are for the Kikemuit Middle School. Big open area with no wetlands. There is also another single acre owned by the town that abutts to this area with very minimal wetland. Flood zone would not allow for build.	Flood Zone
25 Birch Swamp Road, Warren	Non Vacant	12.24	Town of Warren	Large plot of land being used by Warren Highway Dept	Warren Highway Dept
Asylum Road, Warren	Vacant	17.7	Town of Warren	Large plot of land with no access to a road.	Access/Flooding
Poverty Corner Road	Vacant	16.04	Town of Warren	Large plot of land with wetlands and flooding issues.	Flood zone/Wetlands
Birch Swamp Road	Vacant	28.69	Town of Warren	Large plot of land with wetlands and flooding issues.	Flood zone/Wetlands
Schoolhouse Road	Vacant	17.58	Town of Warren	Large plot of land with wetlands and flooding issues.	Flood zone/Wetlands
Schoolhouse Road	Vacant	20.08	Town of Warren	Large plot of land with wetlands and flooding issues.	Flood zone/Wetlands
42 Asylum Rd, Hugh Cole School	Non Vacant	21.97	Town of Warren	Existing Hugh Cole School, not a lot of room for another building, also wetlands behind it.	Existing School
525 Child Street	Non Vacant	12.5	Town of Warren	Existing Kickemuit Middle School, no room for another school.	Existing School
199 Chestnut Street, Bristol	**Non Vacant**	**43.5**	**Town of Bristol**	**Existing high school site. Some wetlands surrounding the river that runs through the site and behind the existing school. Plenty of room where the fields are located for new building.**	**Some wetland**
Asylum Rd, Warren	**Vacant**	**11.75**	**Town of Warren**	**Large open site, some wetlands on one side of it. Not great access to the site and looks like a open field.**	**Access/Some wetland**

REVIEWED & ELIMINATED 6/15/23

BWRSD SITE ASSESSMENT

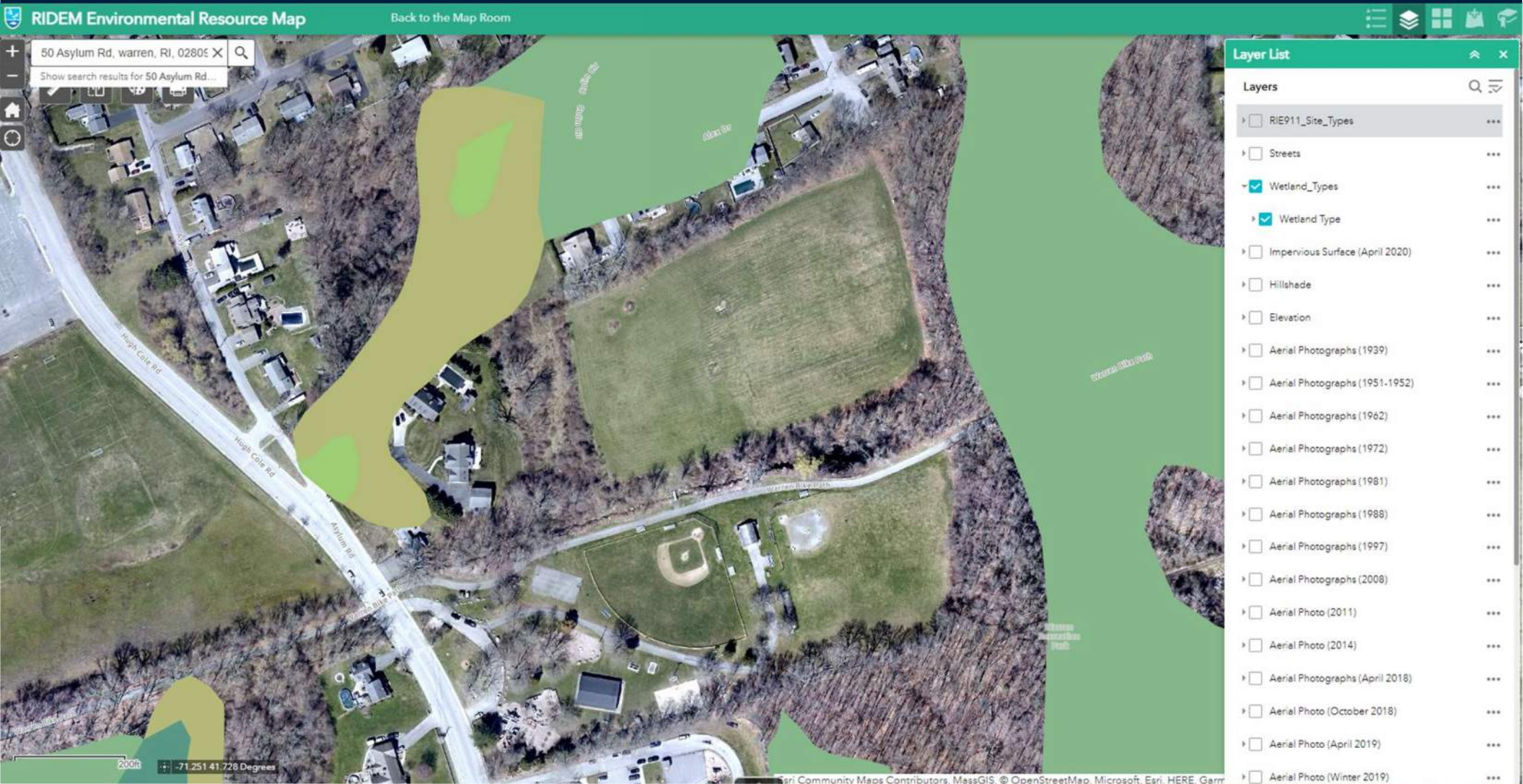
Asylum Rd, Warren

- Property is located right next to existing Hugh Cole School
- Some small areas of wetlands on the far side of the site
- Zoned R10 Residential
- 11.75 Acres
- Access is a potential issue with this site





BWRSD SITE OPTION – ASYLUM RD, WARREN



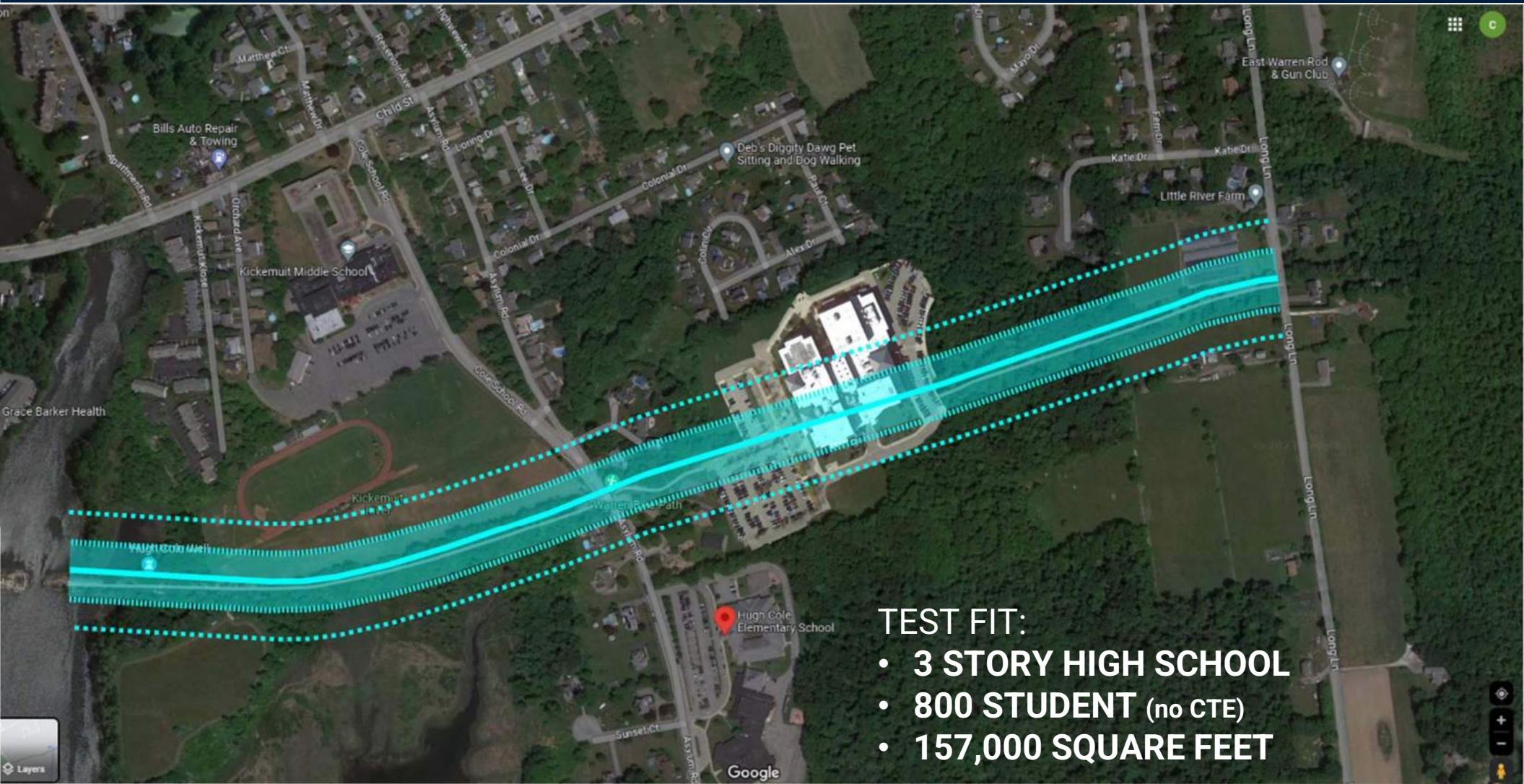
BWRSD SITE OPTION – ASYLUM RD, WARREN







BWRSD SITE OPTION – ASYLUM RD, WARREN



TEST FIT:

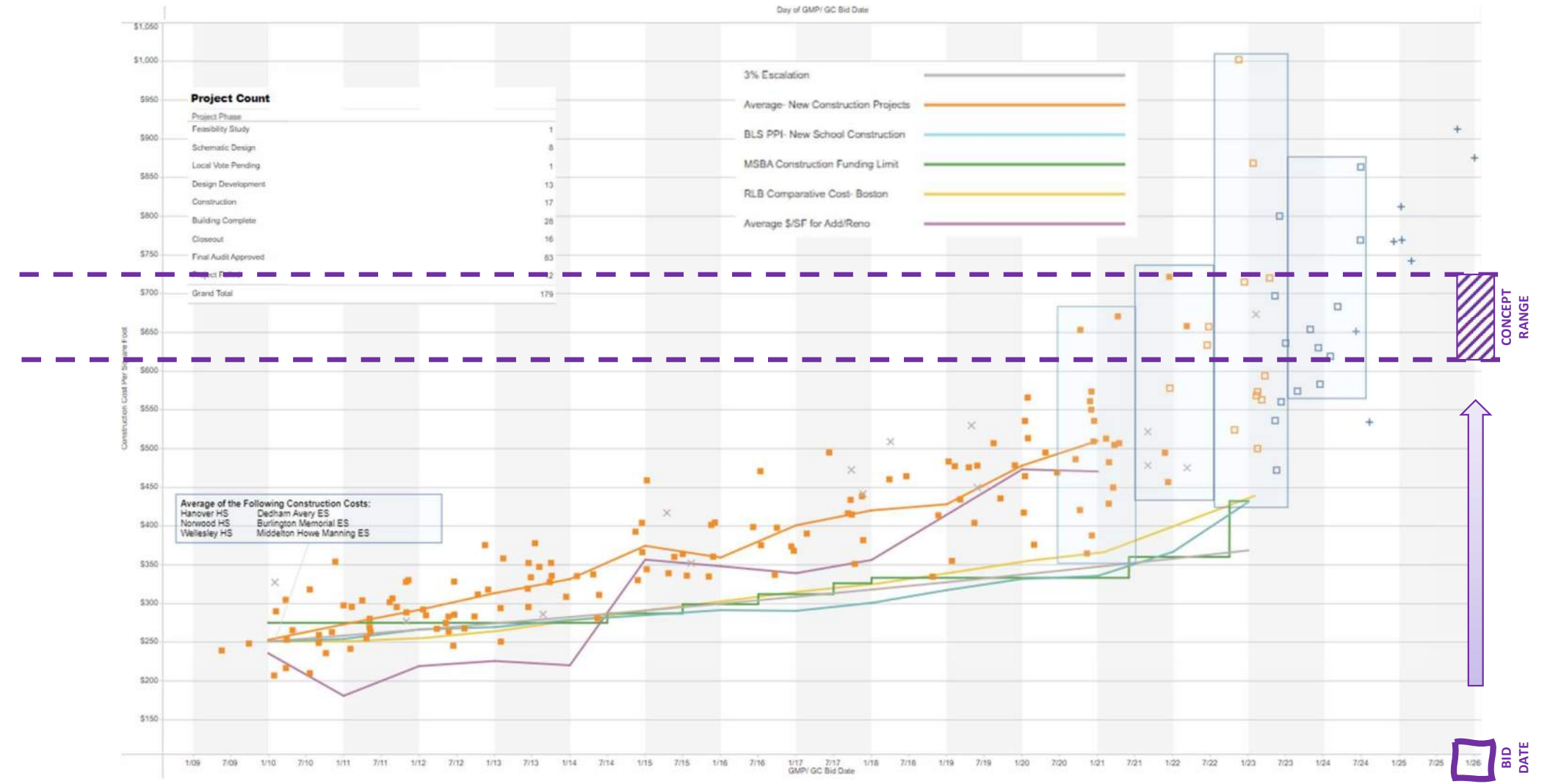
- **3 STORY HIGH SCHOOL**
- **800 STUDENT** (no CTE)
- **157,000 SQUARE FEET**



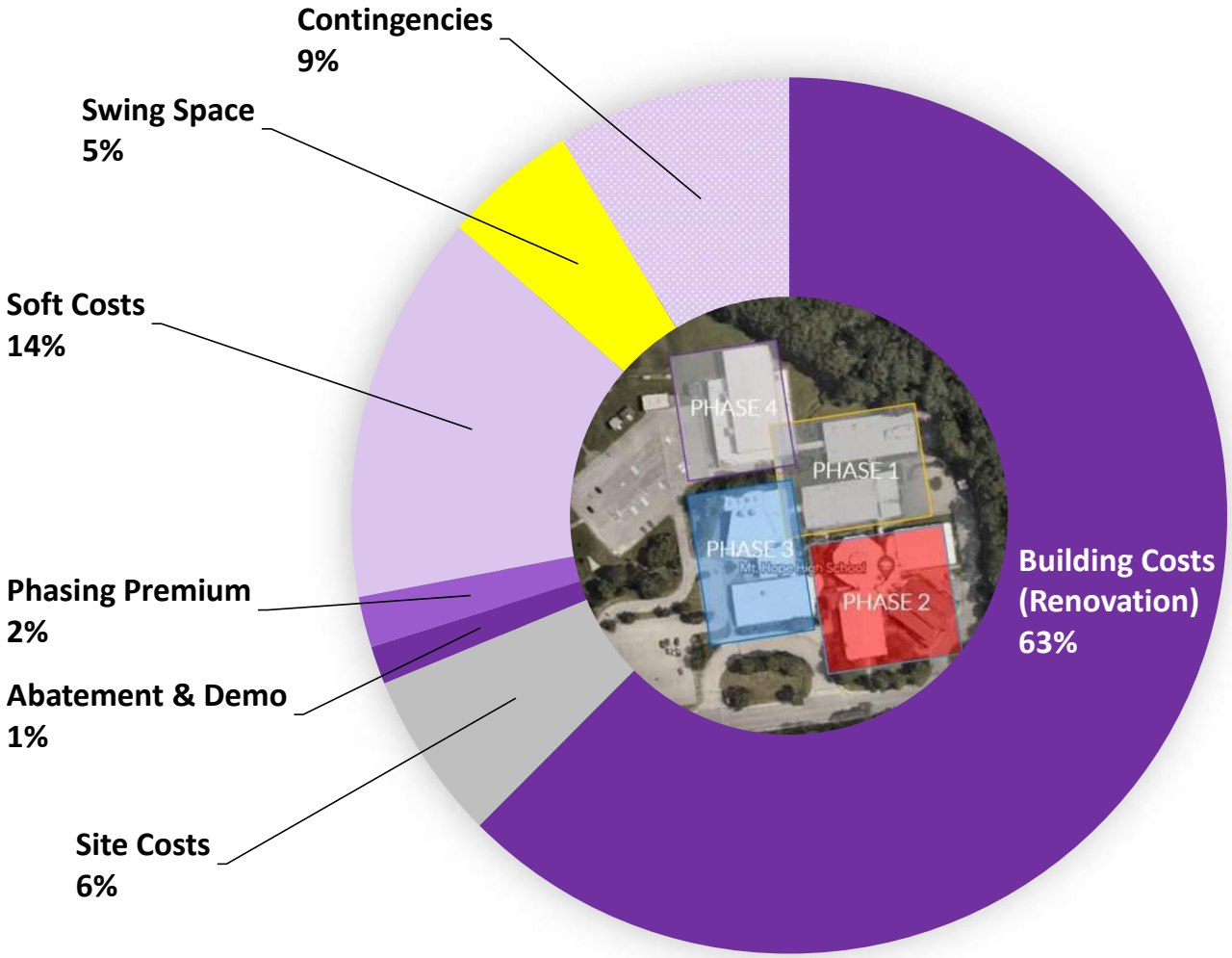
Identify Preferred Solution

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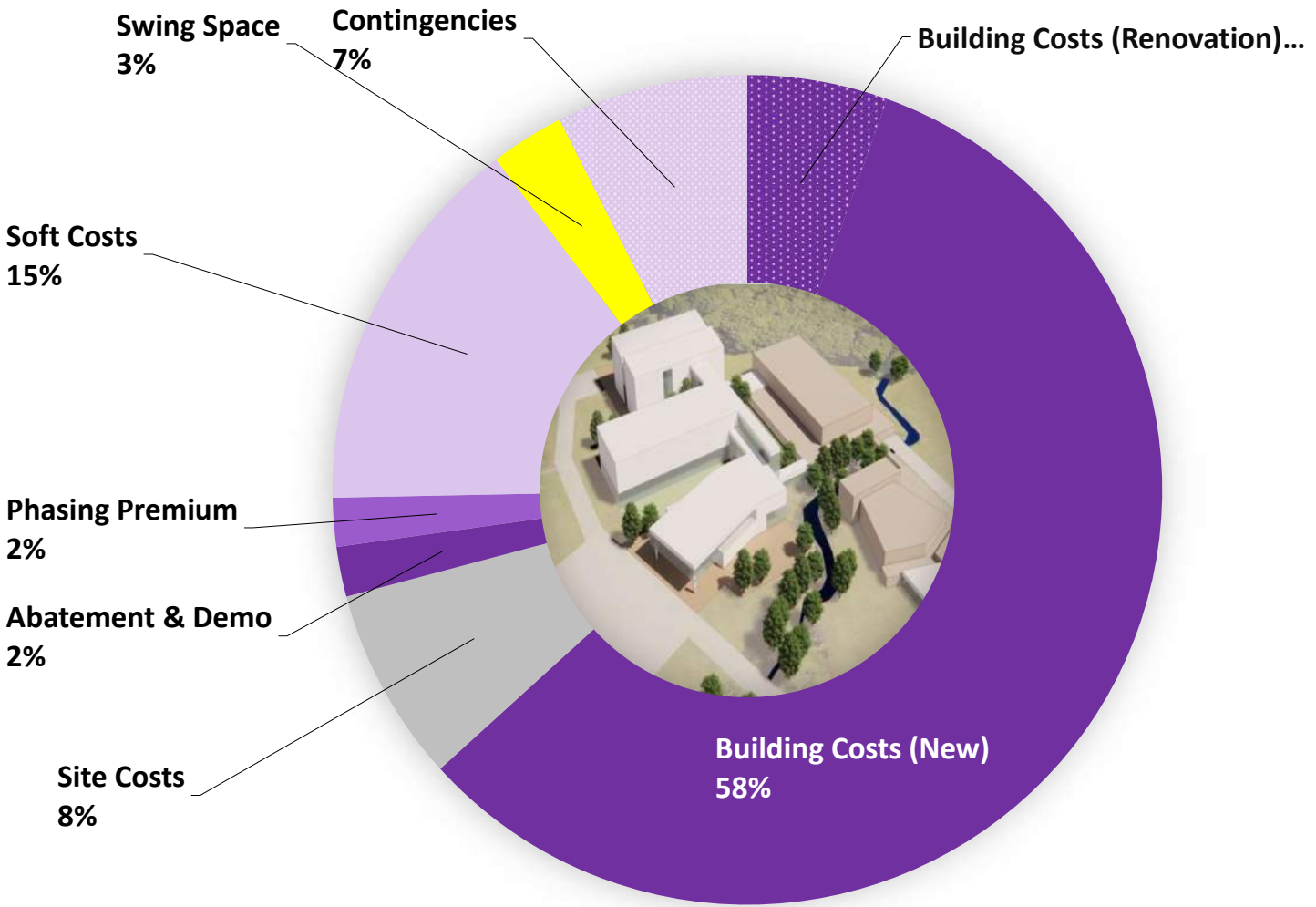
K-12 CONSTRUCTION COST DATA



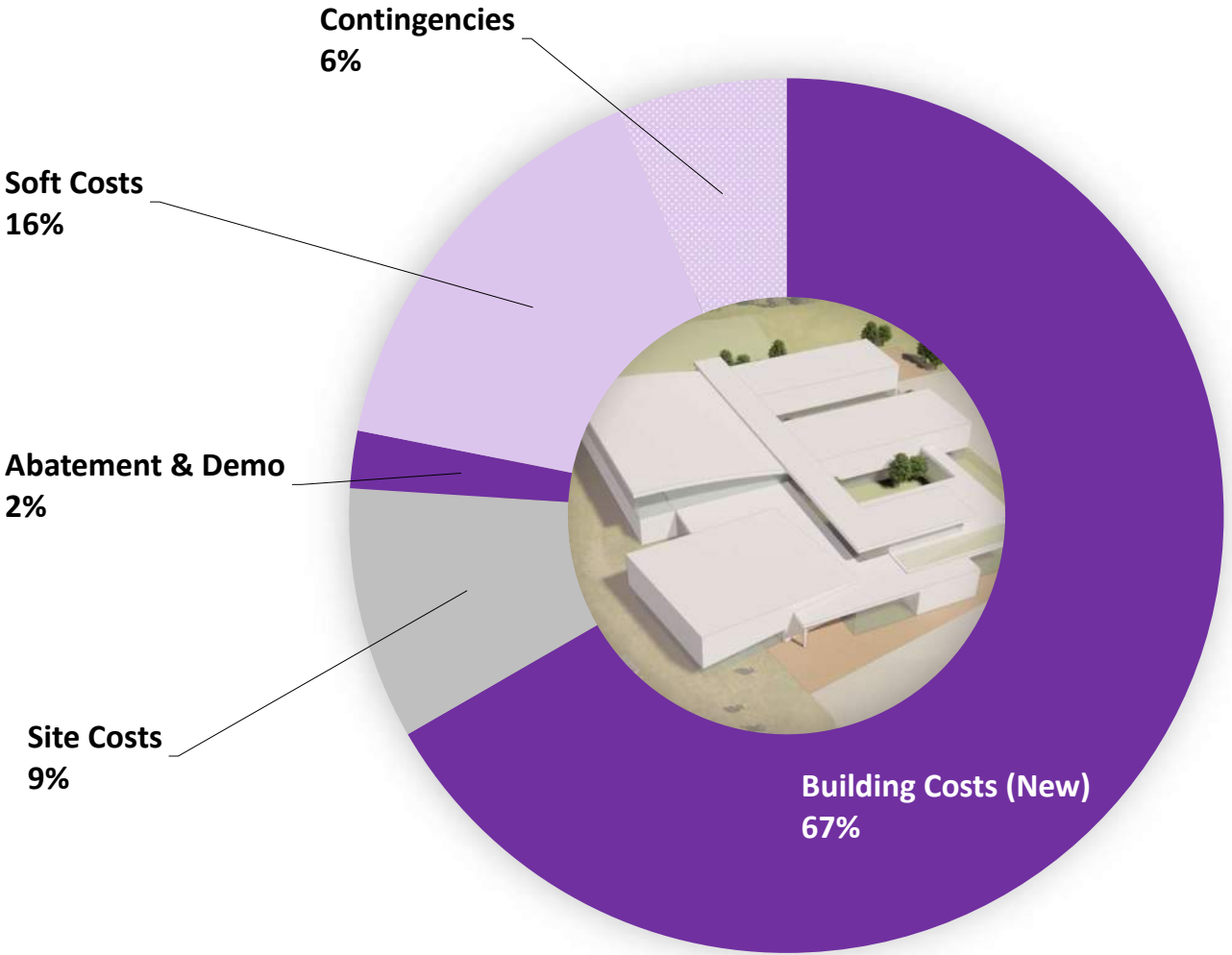
CONCEPTUAL COST ORDER OF MAGNITUDE (REPAIR/RENOVATION)



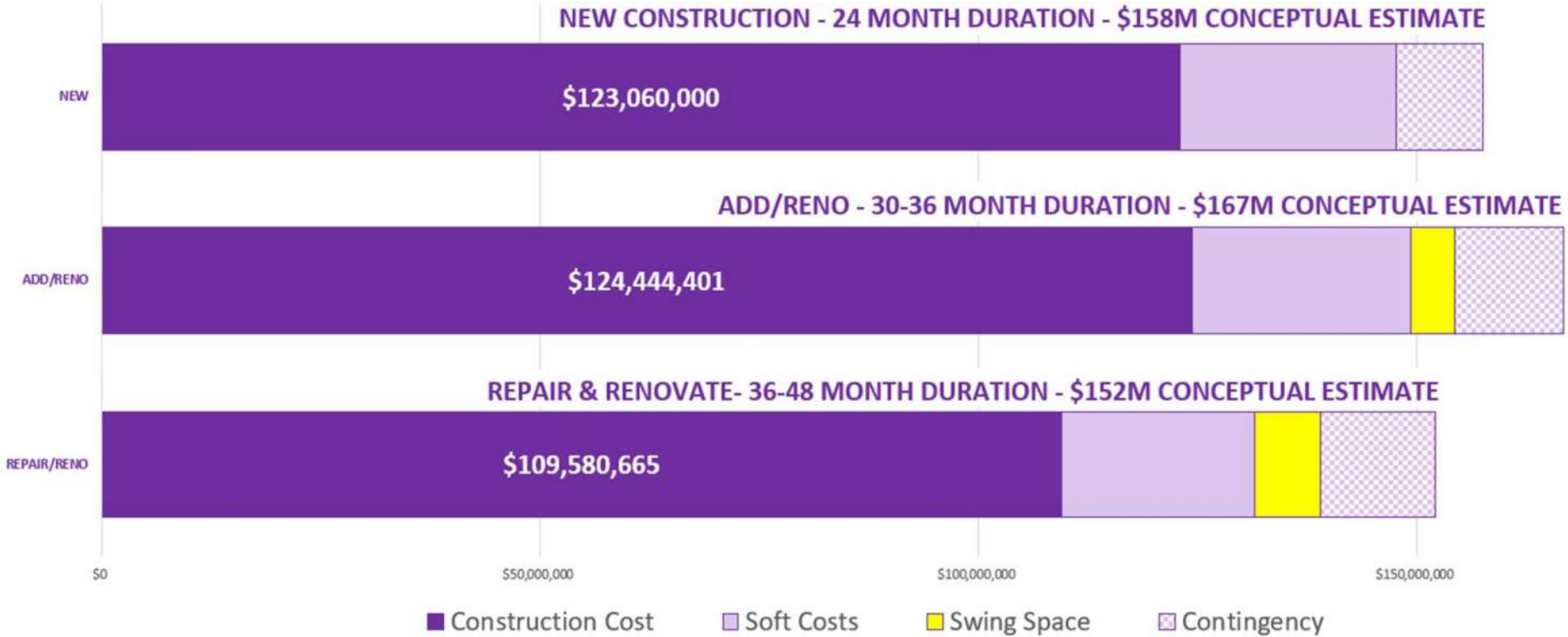
CONCEPTUAL COST ORDER OF MAGNITUDE (ADD/RENO)



CONCEPTUAL COST ORDER OF MAGNITUDE (NEW CONSTRUCTION)



MOUNT HOPE HIGH SCHOOL – CONCEPT COST ANALYSIS



CONCEPTUAL COSTS – FOR COMPARISON OF OPTIONS ONLY
SUPERSEDED BY DETAILED COST ESTIMATES IN SEPT 2023

ANALYSIS

RENOVATE

Pros:

- ✓ Lowest Conceptual Cost
- ✓ Bldg Can Remain in Silver Creek Buffer Zone

Cons:

- ❑ Not Tailored to Ed Plan
- ❑ Impactful to Staff/Students
- ❑ Less Efficient Use of Space
- ❑ Energy Inefficiencies
- ❑ Highest Construction Risk
- ❑ Longest Schedule
- ❑ Costs Due to Moves/Swing Space

ADD RENO

Pros:

- ✓ Tailored to Ed Plan
- ✓ Larger Gym
- ✓ Gym Can Remain in Silver Creek Buffer Zone

Cons:

- ❑ Highest Conceptual Cost
- ❑ Higher Construction Risk
- ❑ Students Lose use of Gym During Renovation
- ❑ Potential loss of field(s)

NEW

Pros:

- ✓ Tailored to Ed Plan
- ✓ Minimizes Impact to Staff/Students
- ✓ Lower Construction Risk
- ✓ Shortest Schedule
- ✓ No Swing Space Costs
- ✓ Potential for Baseball field if 3 story

Cons:

- ❑ Mid-Range Conceptual Cost
- ❑ Can not be in Buffer Zone
- ❑ Potential loss of field(s)



MT HOPE CONCEPT DEVELOPMENT

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Mt Hope High School

RENOVATION OPTION

Phase 1 CTE - Art and Science

- Phase 1A Building F
- Phase 1B Building E
- Boiler Room (Phase 1A and 1B)

Phase 2 Academics, Library and Cafeteria

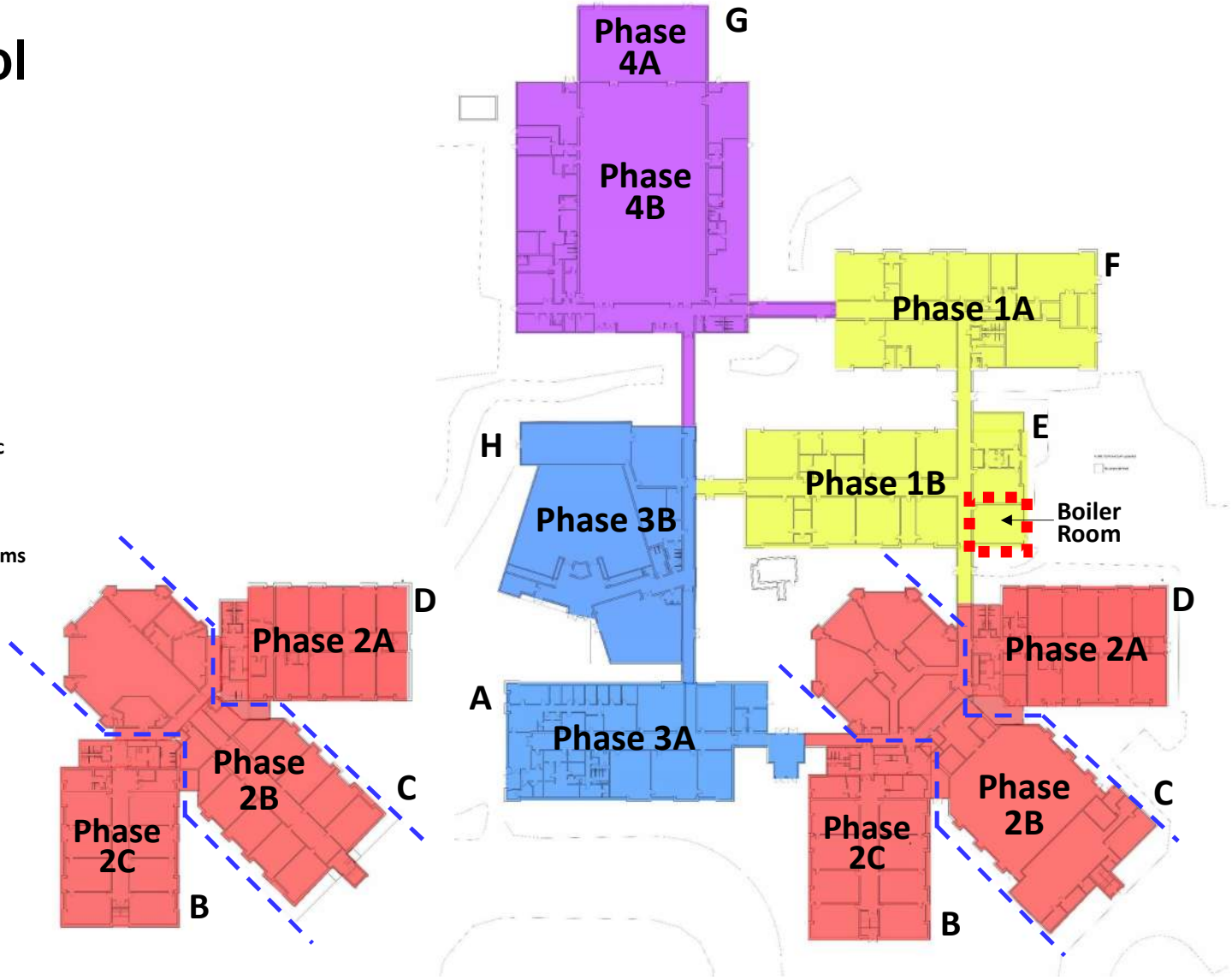
- Phase 2A Building D
- Phase 2B Building C
- Phase 2C Building B

Phase 3 Administration, Auditorium and Music

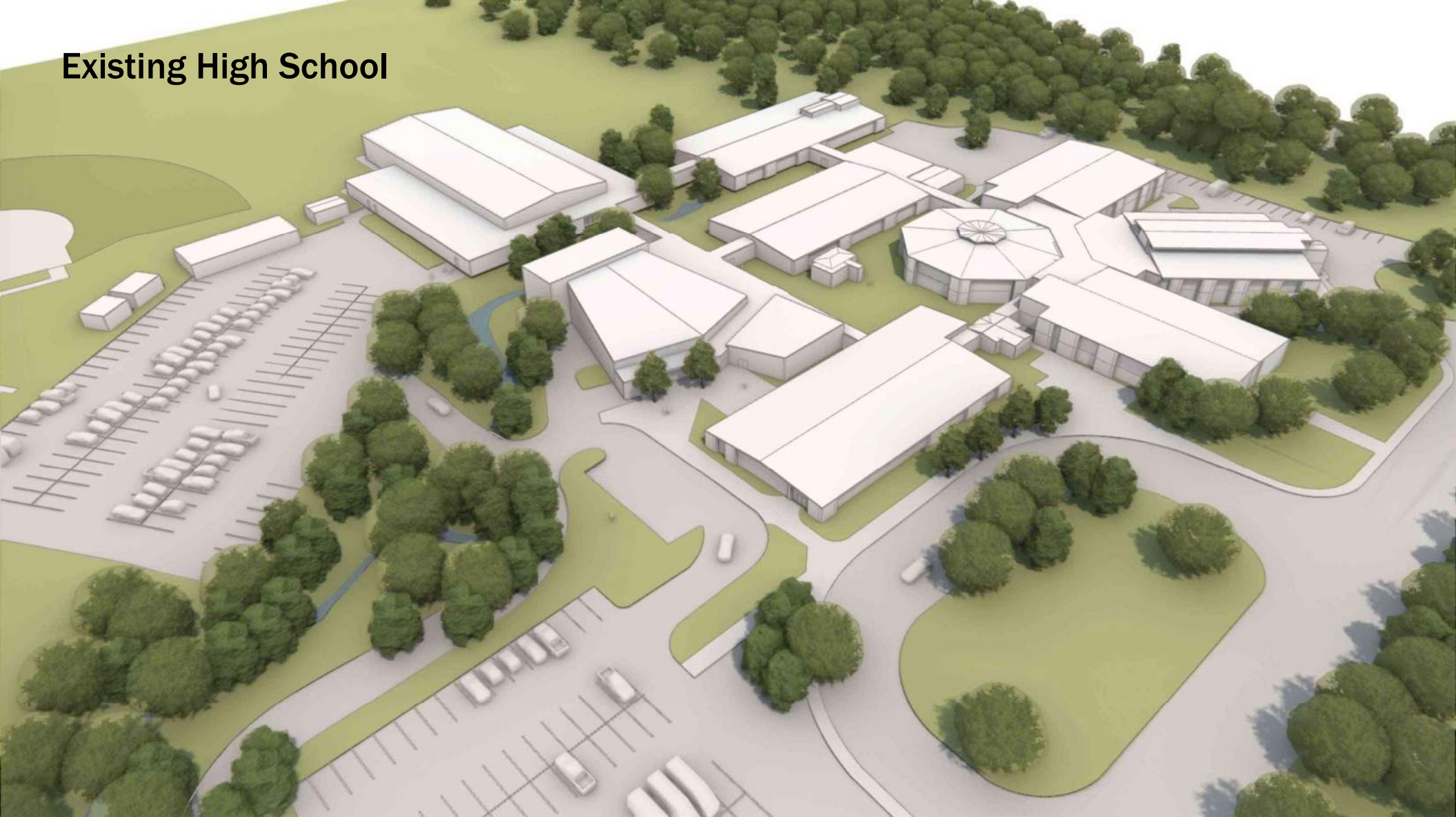
- Phase 3A Building A
- Phase 3B Building H

Phase 4 Gymnasium, Wellness and Locker Rooms

- Phase 4A Building G Wellness
- Phase 4B Building G Gym



Existing High School



Site

CREEK AND WETLANDS SETBACK

APPROXIMATE FEMA FLOOD BOUNDARY

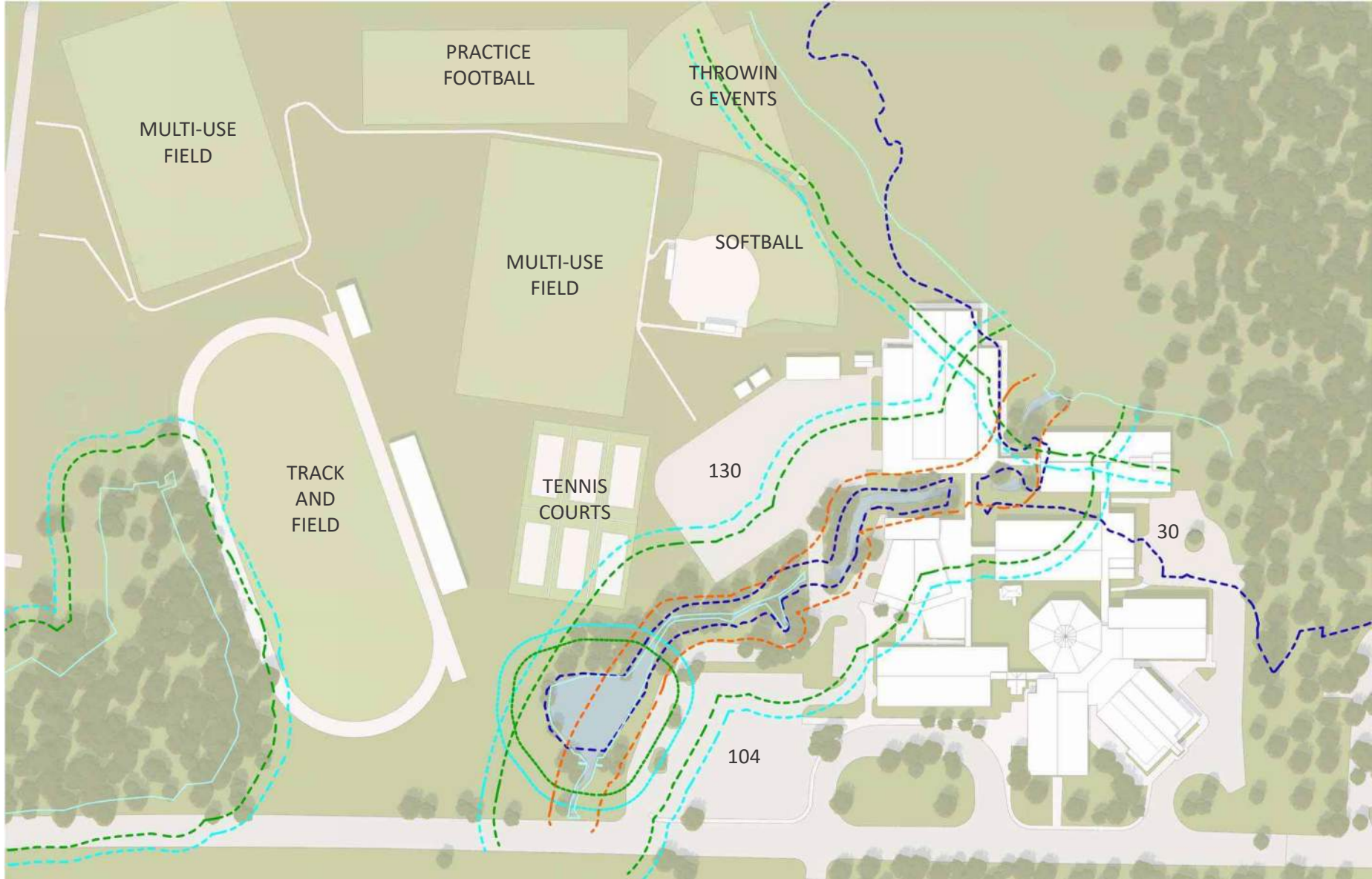
20FT SETBACK

SILVER CREEK 100FT BUFFER ZONE

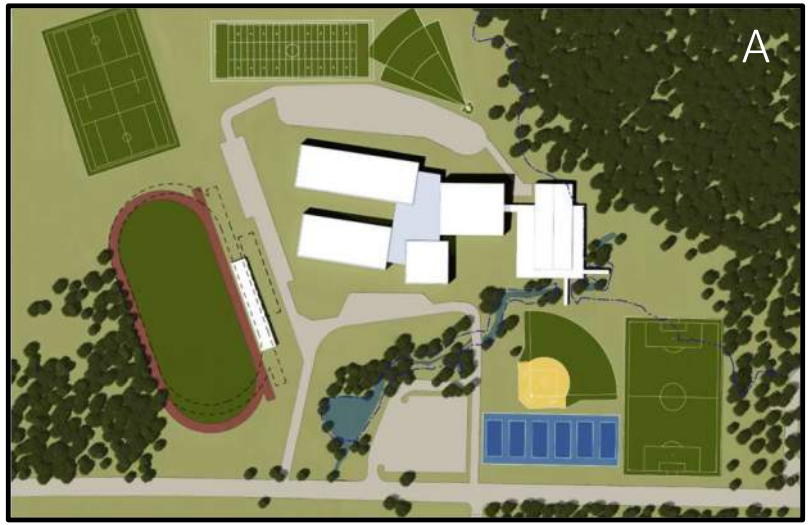
WETLANDS 50FT SETBACK

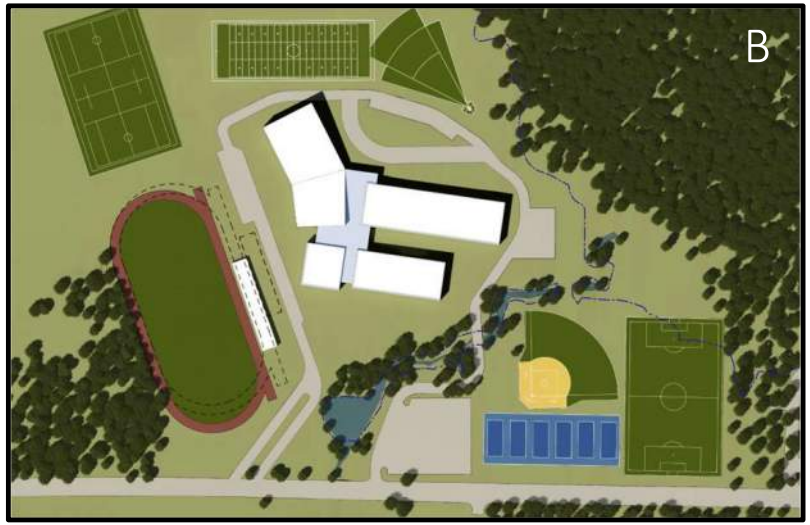
PRIMARY STRUCTURE SETBACK

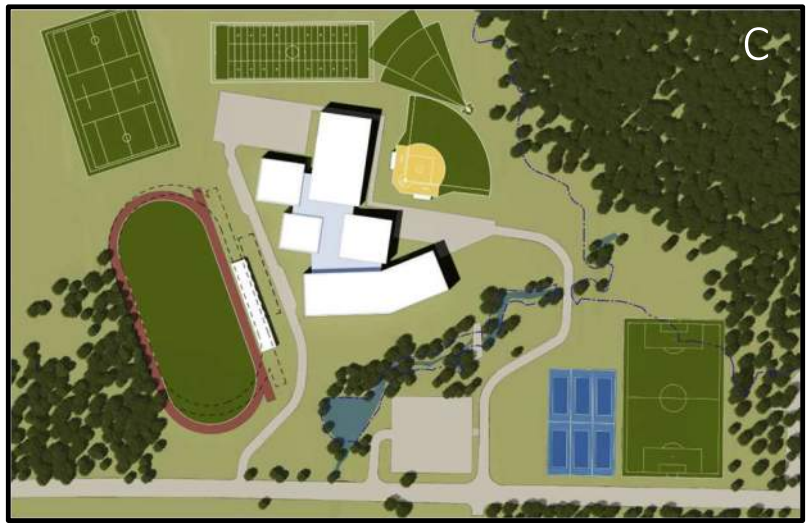
SILVER CREEK AND WETLAND EDGE

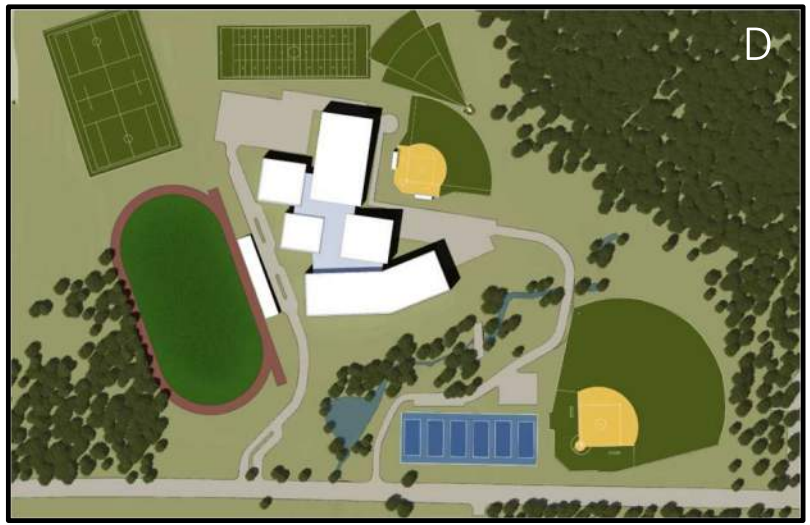


New High School Design Options





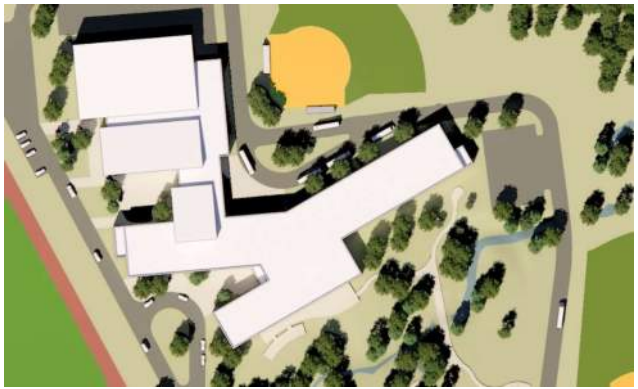






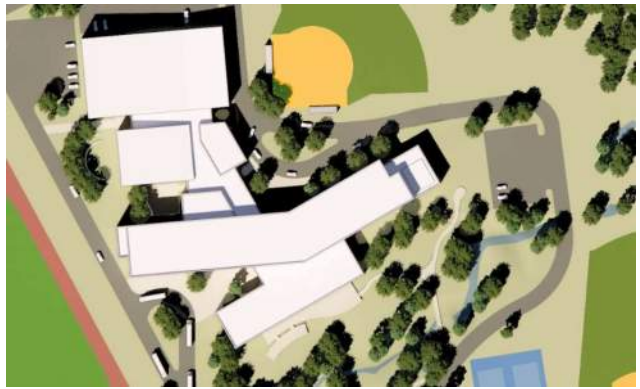
Preferred Solutions

OPTION A



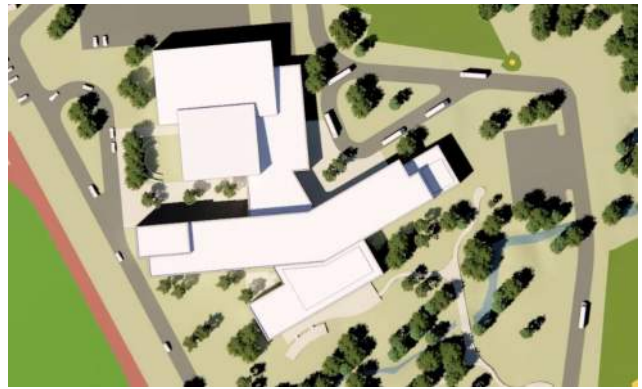


OPTION B





OPTION C





Sustainable Design



NE CHPS

Prerequisites

Integration and Innovation
- Integrated Design
- Educational Display
- Safer Schools by Design

Operations and Metrics
- Facility Staff + Occupant Training
- Performance Benchmarking
- Systems Maintenance Plan
- Indoor Environmental Management Plan
- Integrated Pest Management
- Anti-Idling Measures – signage
- ENERGY STAR

IEQ
- HVAC Design – ASHRAE 62.1 -2016 (MERV 11 or higher)
- Pollutant & Chemical Source Control
- Outdoor moisture management
- Low Emitting materials
- Daylighting: Glare Protection
- Views
- Acoustical Performance

NORTHEAST COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS
CHPS
Better buildings. Better students.

Energy
- Energy Performance
- Commissioning
- Environ Preferrable Refrigerants
- Local Energy Efficiency Incentives and Assistance

Water
- Minimum Reduction in Indoor Potable Water Use
- Irrigation & Exterior Water Budget / Use Reduction
- Irrigation Systems Commissioning

Sites
- Site Selection
- Site and Building Best Practices

Materials and Waste Management
- Storage and Collection of Recyclables
- Minimum Construction Site Waste Management

MHHS SITE


DARTMOUTH STREET
PRACTICE FOOTBALL FIELD
SOFTBALL FIELD
MULTI-USE FIELD
THROWING EVENTS
NAOMI STREET
ICE OUTDOOR
ARTS
GYM
CAFE COURTYARD
ACADEMICS
BUS LOOP
COMMUNITY ENTRY
PERFORMING ARTS
ENTRY
MAIN COURTYARD
CENTRAL ADMIN
FRESHMAN ACADEMY
CAR DROP-OFF
MAIN ENTRY
ADMIN
MEDIA COMMONS
COMPETITION TRACK AND SYNTHETIC TURF FIELD
BASEBALL FIELD
LEILA JEAN DRIVE
SILVER CREEK
TENNIS COURTS
CHESNUT STREET
N
SITE PLAN

MHHS NORTHEAST AXONOMETRIC



MHHS SOUTHWEST AXONOMETRIC



MEDIA CENTER



MAIN ENTRY

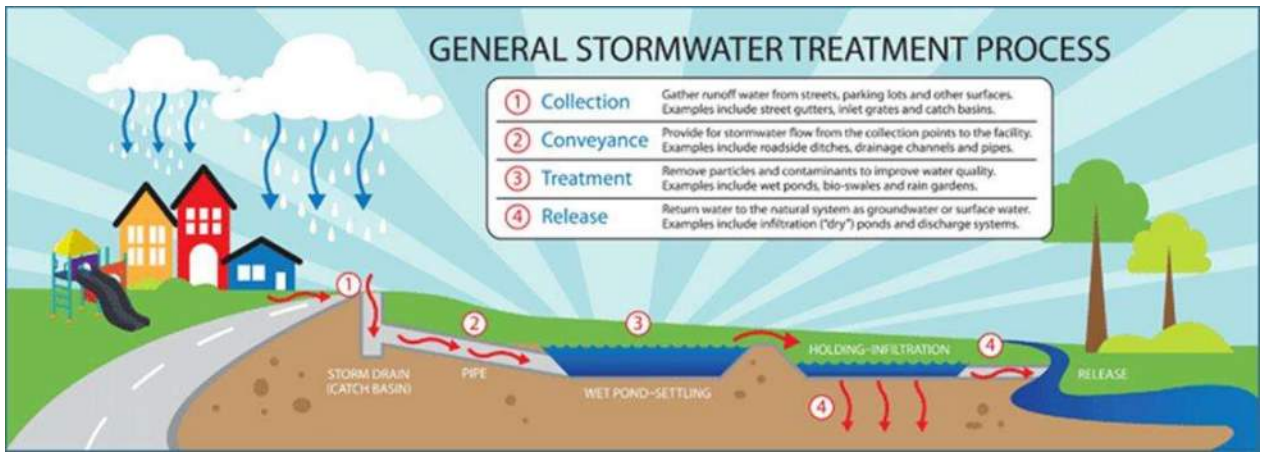


LOBBY



Stormwater Management System Process

- Collect and transport stormwater (a.k.a. rainwater)
- Provide stormwater treatment with the settling and removal of sediments
- Infiltrate stormwater to allow stormwater to seep into the ground
- Detain stormwater in basins to hold it onsite during major rain events
- Discharge any remaining stormwater at a slow and controlled rate



Collection → Conveyance → Treatment → Infiltration / Detention → Discharge

Photos of Example Stormwater Management Systems



Detention Basin



Tree Box Filter



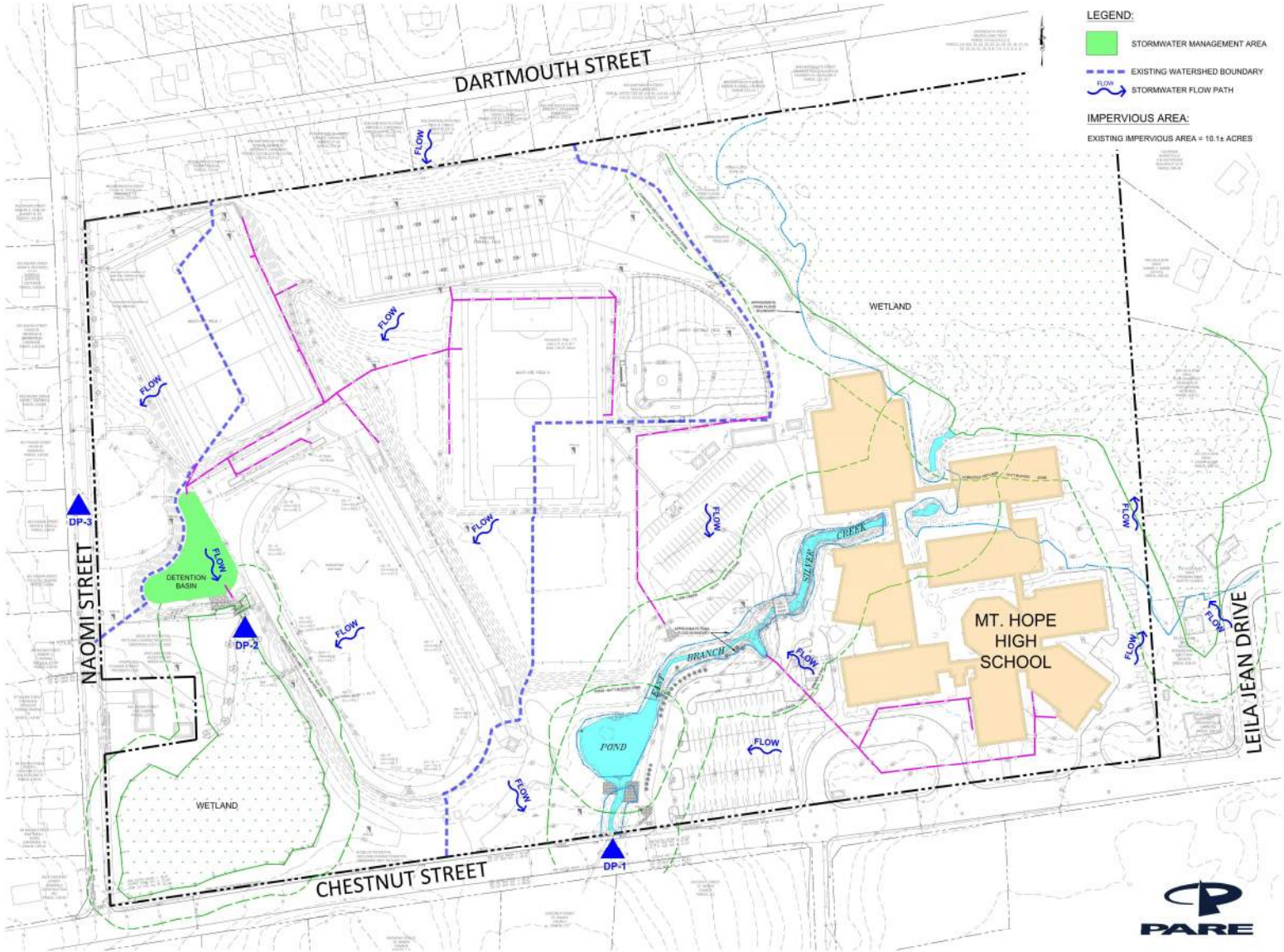
Bioretention Area



Sand Filter

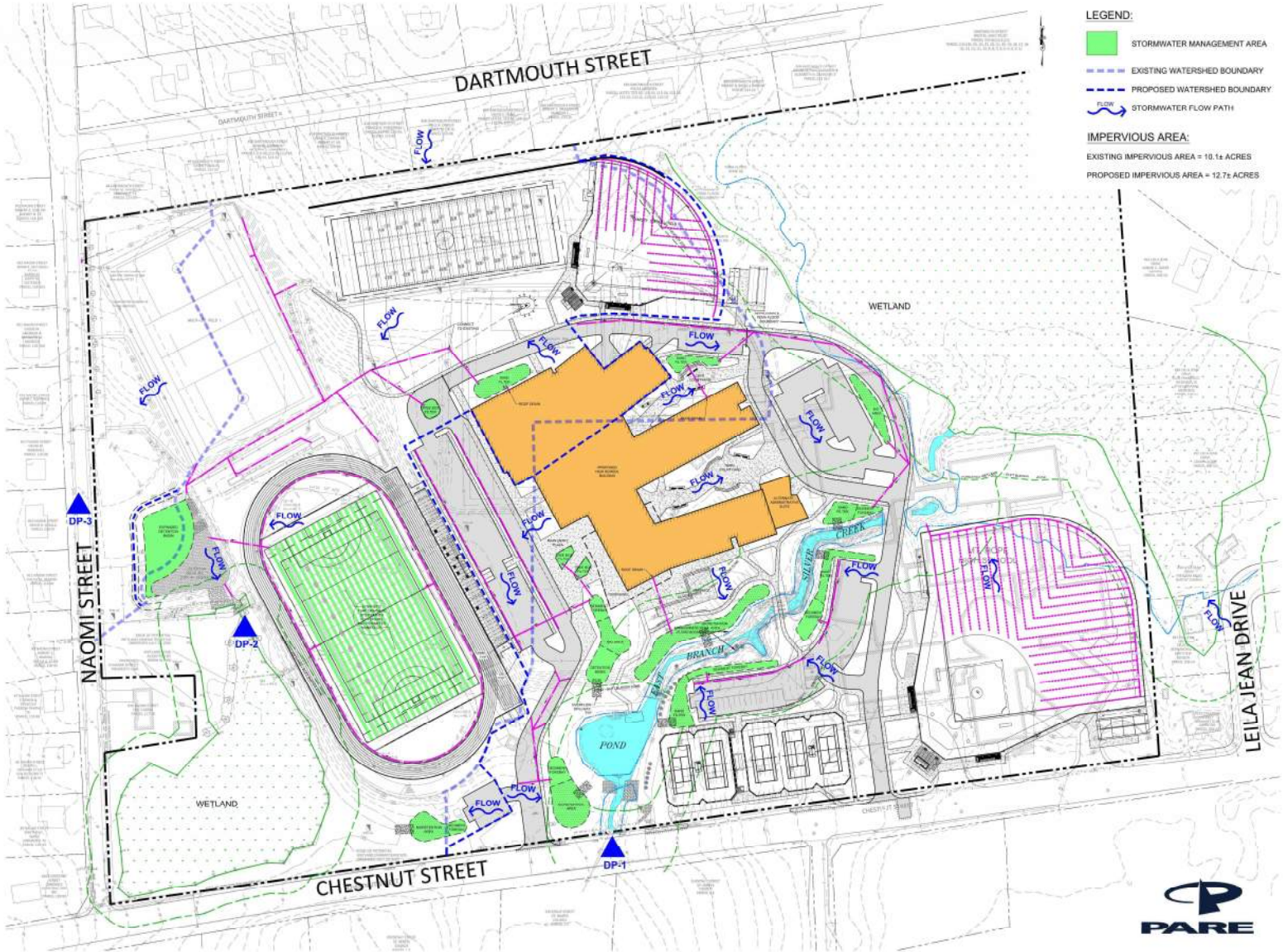
Stormwater Management - Existing

- Roof and pavement areas flow directly into Silver Creek
- Only one stormwater management area.



Stormwater Management - Proposed

- Improvement to current condition
- Stormwater management features
- Restoration of vegetation at the creek
- Keeping out of the floodplain
- Addressing the high water table





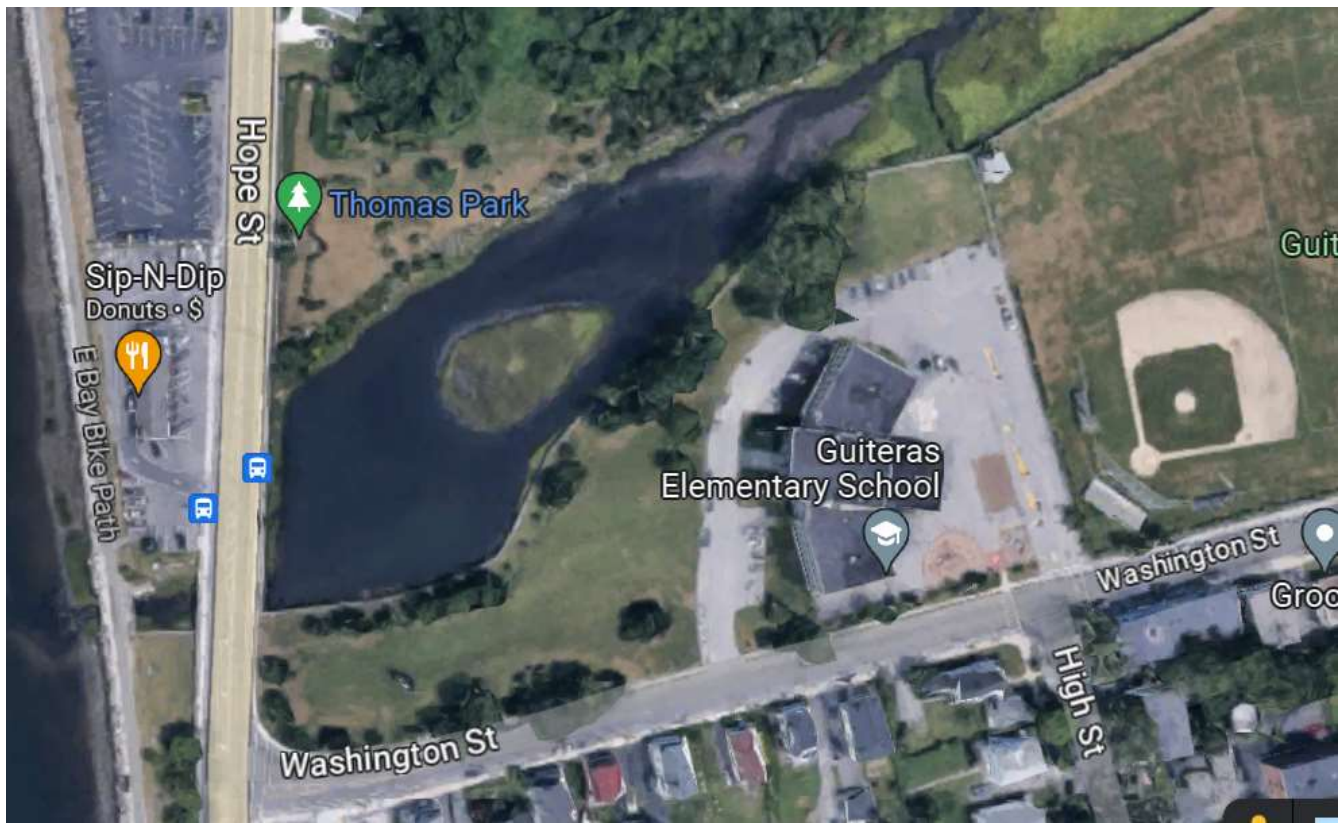
CAPITAL IMPROVEMENT PROJECTS

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Guiteras Elementary School

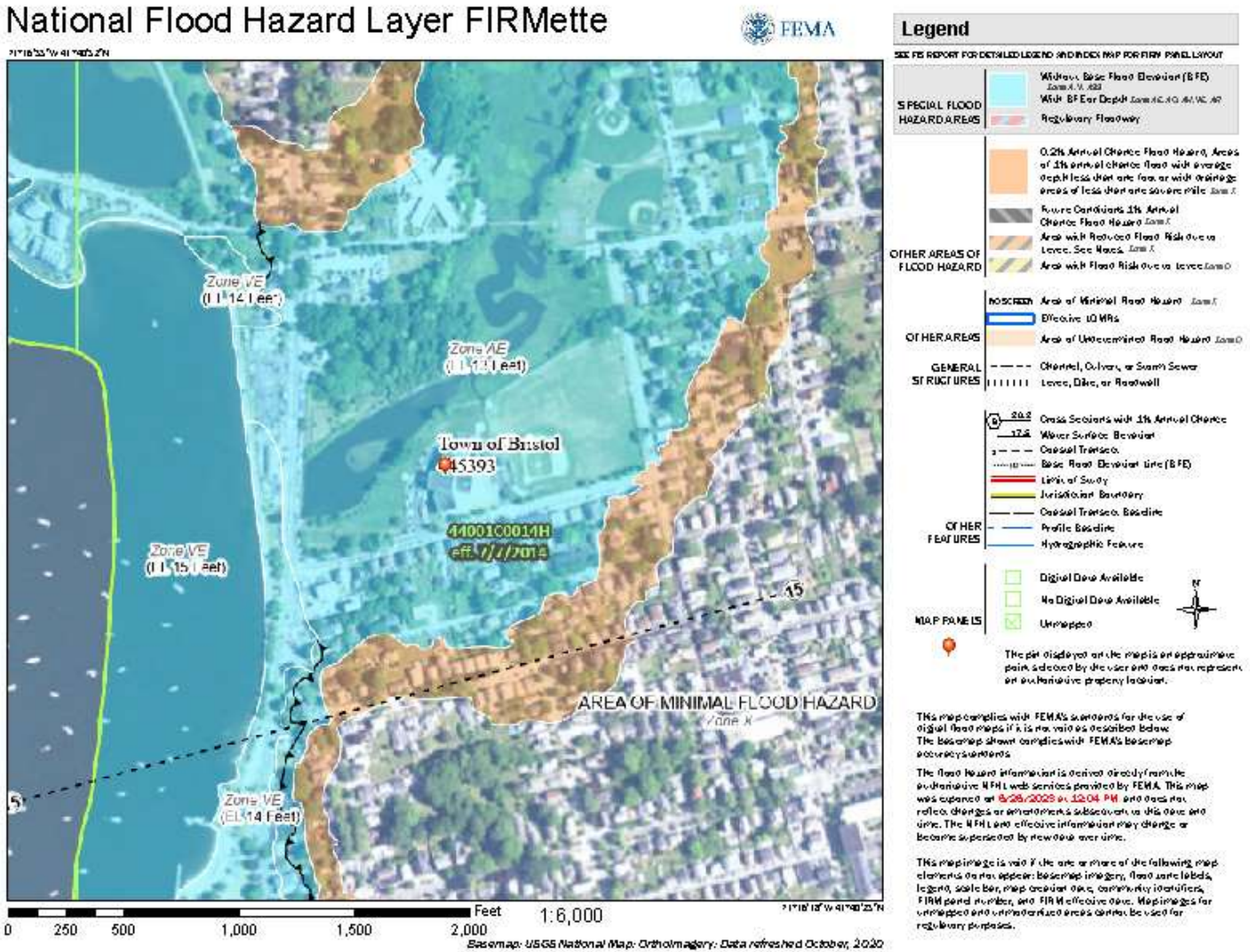
- On the Silver Creek
- Fronting Bristol Harbor
- Full size ball field
- Floods





Guiteras Elementary School

- FEMA Flood Zone AE (13 ft.)

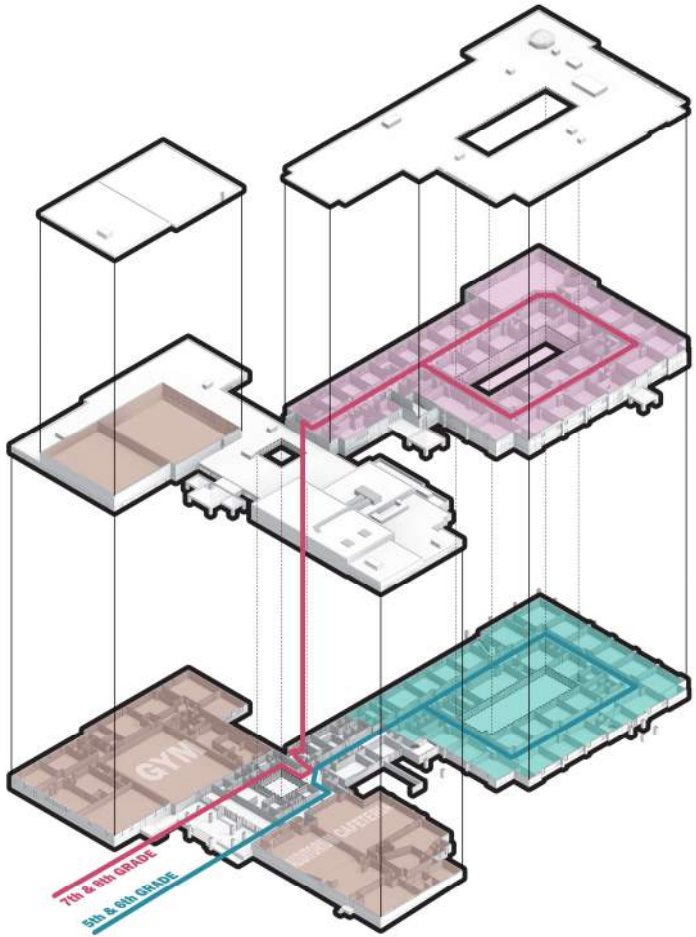


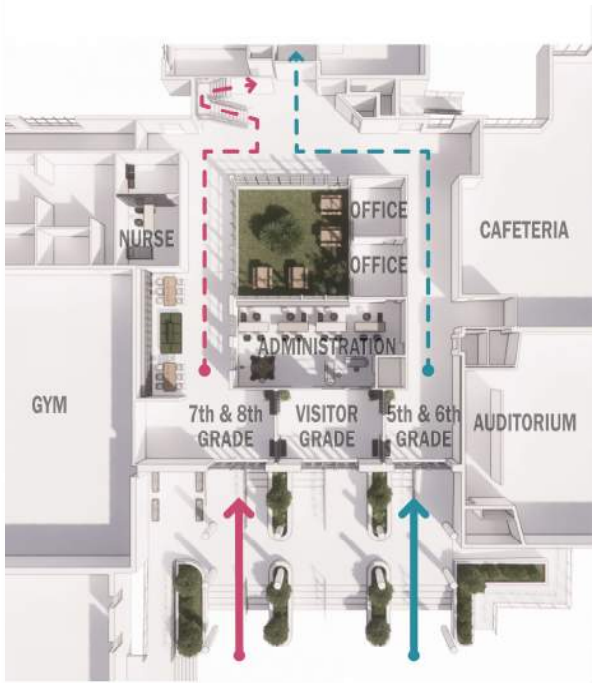
Kickemuit Middle School

- *Repoint masonry and re-caulk windows – Deferred Maintenance*
- *Replace damaged exterior wall lights - Deferred Maintenance*

- Replace ballasted roof
- Replace damaged exterior doors and hardware
- Replace damaged exterior railings at ramp and stairs
- Replace ACT at second floor corridors and classrooms
- Replace intercom system
- New Security System
- Install an additional egress door in the gymnasium
- Replace hardware in egress doors
- Install continuous handrails in stairs
- Repair exterior walkway for accessibility
- Replace exhaust fans on roof

- Add new entry for 5th and 6th grade academy
- New electrical service
- Relocate electrical panel by water pump
- Build in exterior exhaust for two gas fired boilers





Hugh Cole Elementary School

- *Repoint masonry and caulk windows on original building - Deferred Maintenance*
- *Replace ACT in original building - Deferred Maintenance*

- Replace membrane roof on original building
- Abate asbestos ceiling tiles
- Renovate toilet rooms in original building to comply to ADA
- Provide ADA compliant door hardware in original building
- Modify door swing or hardware in classroom to conform to ADA
- Replace intercom system
- New Security System
- Add fire alarm to courtyard
- Replace hot water loop and insulate piping
- Replace exhaust fans in original building
- Repair AC units in data rooms
- Replace sprinkler piping that was installed with incorrect pipe size
- Repair asphalt play area
- Replace pavement to main loop

- Insulate piping so it is continuous to prevent condensation.
- Replace rusting piping and insulate piping at classroom unit ventilators.
- Add new ductwork, reinsulate, and add reheat coil at Library.
- Add fresh air to cafeteria to meet code requirements.
- Update classroom switching for consistency throughout school.



Rockwell Elementary School

- *Caulk all windows - Deferred Maintenance*
- *Paint exterior wood trim - Deferred Maintenance*

- Replace exterior doors and hardware
- Replace intercom system
- New security system
- Add drainage to playground area to address ponding issues
- Replace pavement and repair concrete at driveway

- Add new prekindergarten playground
- Replace mechanical system in kind (new boilers and unit ventilators with fresh air intake)



Colt – Andrews Elementary School

- *Repair exterior doors and repaint wood windows at Colt - Deferred Maintenance*
- *Repair pilaster damage in Colt auditorium - Deferred Maintenance*
- *Wash masonry and paint wood trim in Andrews - Deferred Maintenance*
- *Refinish exterior railings in Andrews - Deferred Maintenance*
- Investigate water infiltration in Colt basement - *Deferred Maintenance*

- Replace intercom system
- New Security System
- Add automatic door openers to doors with noncompliant clearance
- Replace Chiller in Andrews
- Replace piping insulation in Colt and Andrews
- Replace Intercom system in both Colt and Andrews
- Replace refrigerant lines in Colt

- Replace Boiler in Andrews
- Investigate water damage in Andrews ceilings (roof repair)
- Create safer connection between Colt and Andrews

- Replace R-22 refrigerant.
- Replace non functioning backflow preventer in Colt
- Remove and replace all HVAC insulation in Andrews







PROJECT BUDGET

PMA Consultants | PERKINS EASTMAN

MAXIMIZING FUNDING

63% Base

+ up to 20% Bonus

Districts are eligible for two percent (2%) additional reimbursement funds for projects that achieve energy efficiency thirty percent (30%) above the RI Building Energy Code; 3% additional reimbursement for energy efficiency forty percent (40%) above the RI Building Energy Code; and four percent (4%) additional reimbursement for energy efficiency fifty percent (50%) above the RI Building Energy Code.



SCHOOL BUILDING AUTHORITY
at the Rhode Island Department of Education







School Cost

For the RIDE school facilities assessments, project costs per square foot were developed based ona review of a variety of school project cost data from completed Rhode Island projects, similar Massachusetts and Connecticut K-12 schools, and national square foot school cost publications. As the determination of a single square foot cost for each school type is variable, due to its location geographically (suburbs versus city), varying site conditions, un-predictable economic influences, etc., the square foot costs reflect total project costs per square foot for the representative school type.

COST PER SQUARE FOOT

The total project square foot costs assumed 2023 economics and a hard bid (lump sum) environment. Focused on the low bidder's bid, these costs include a 20% allowance for all project soft costs and are in line with RIDE School Construction Regulations (5/24/07) regarding eligible project costs:

- Elementary School: $564/sf
- Middle School: $592/sf
- High School: $628/sf

COST PER STUDENT

Combining furniture, fixtures, and equipment (FF&E), and technology (IT) into one total budget provides the most flexibility to each district. The FF&E and IT allowances assumes an ES of 75,000 sf with 350 students; a MS of 120,000 sf with 675 students; and a HS of 175,000 sf with 890 students. The following per student budgets for FF&E and IT budgets are:

- FF&E: $2,100 /student
- IT: $3,000/student

TAX IMPACT CALCULATOR

BRISTOL WARREN REGIONAL SCHOOL DISTRICT
RIDE NECESSITY OF SCHOOL CONSTRUCTION - STAGE II
PROJECTED TAX IMPACT CALCULATOR

STEP #1	SELECT YOUR TOWN FROM DROP DOWN:	BRISTOL	
STEP #2	ENTER YOUR ASSESSED VALUE:	$372,600	(see link to assessor database below)

	MONTHLY	QUARTERLY	ANNUALLY
TAX IMPACT PROJECTION*	$14.90	$44.71	$178.85

*Based upon 83% reimbursement rate, $183.3M of eligible costs, 30 year bond at 4.5%, and partial offset by existing debt maturing on May 15, 2028.

BRISTOL ASSESSOR DATABASE https://data.nereval.com/Search.aspx?town=Bristol
WARREN ASSESSOR DATABASE https://data.nereval.com/SearchInfo.aspx?town=Warren

FY24 MEDIAN SINGLE-FAMILY HOME (BRISTOL): **$372,600**

TAX IMPACT CALCULATOR

BRISTOL WARREN REGIONAL SCHOOL DISTRICT
RIDE NECESSITY OF SCHOOL CONSTRUCTION - STAGE II
PROJECTED TAX IMPACT CALCULATOR

STEP #1	SELECT YOUR TOWN FROM DROP DOWN:	WARREN	
STEP #2	ENTER YOUR ASSESSED VALUE:	$388,450	(see link to assessor database below)

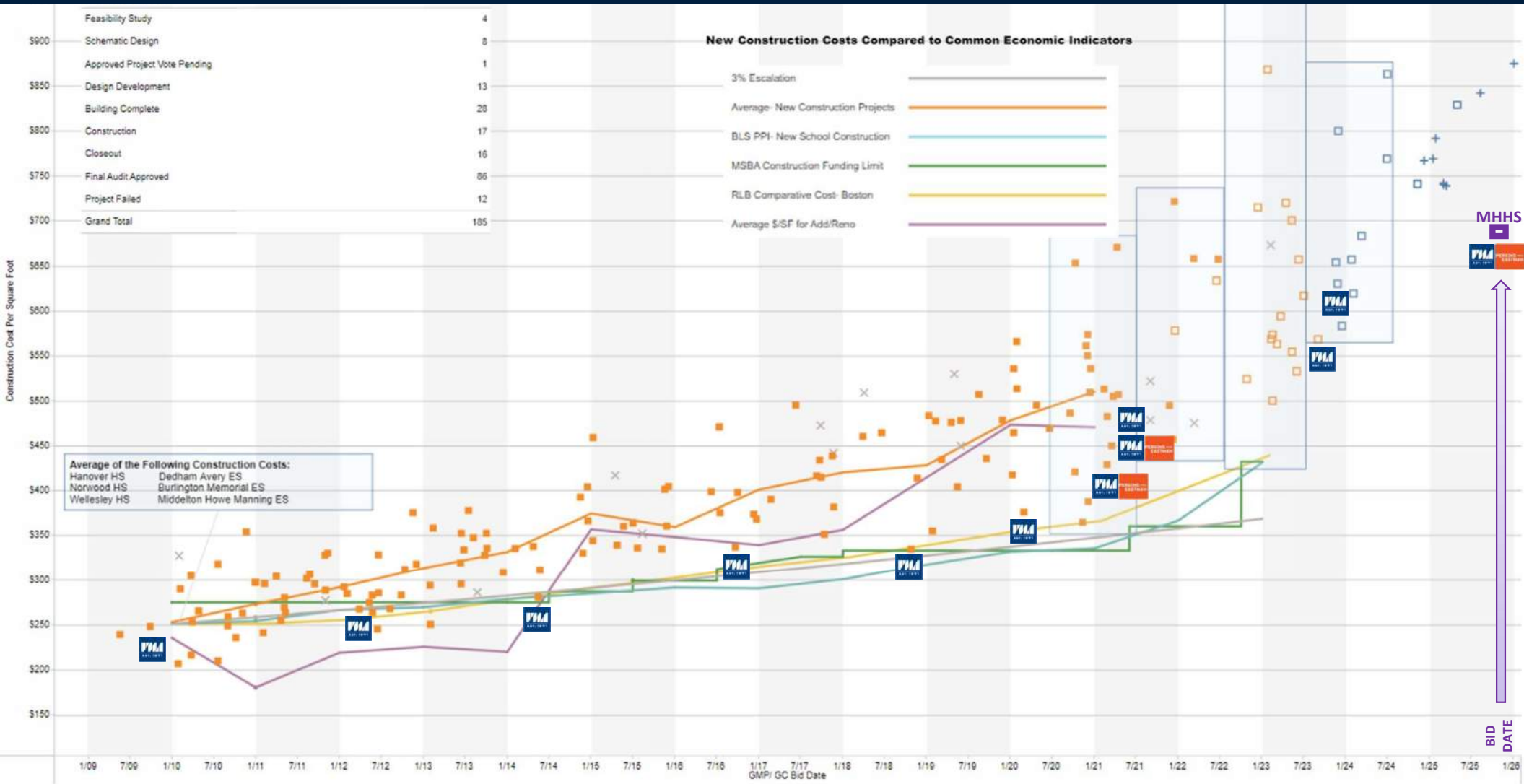
	MONTHLY	QUARTERLY	ANNUALLY
TAX IMPACT PROJECTION*	$26.87	$80.60	$322.41

*Based upon 83% reimbursement rate, $183.3M of eligible costs, 30 year bond at 4.5%, and partial offset by existing debt maturing on May 15, 2028.

BRISTOL ASSESSOR DATABASE https://data.nereval.com/Search.aspx?town=Bristol
WARREN ASSESSOR DATABASE https://data.nereval.com/SearchInfo.aspx?town=Warren

FY24 MEDIAN SINGLE-FAMILY HOME (WARREN): **$388,450**

COST EFFECTIVE SOLUTIONS



OUTREACH

- ✓ Website Updates
- ✓ Social Media Launch
- ✓ Building Committee
- ✓ School Committee
- ✓ Bristol Town Council
- ✓ Warren Town Council
- ✓ Bristol Concert Series
- ✓ Warren Concert Series
- ✓ Hope & Main Schoolyard Markets
- ✓ Bristol Community Night Out
- ✓ MHHS Class of 2027 Welcoming
- ✓ MHHS Home Football Game
- ✓ Bristol Porchfest
- ✓ East Bay Running Festival
- ✓ Community Forum & MHHS Tour
- ✓ Abutters Meeting
- ✓ Warren Walkabouts
- ✓ Halloween Walkabout
- ❑ Community Forum (11/1)

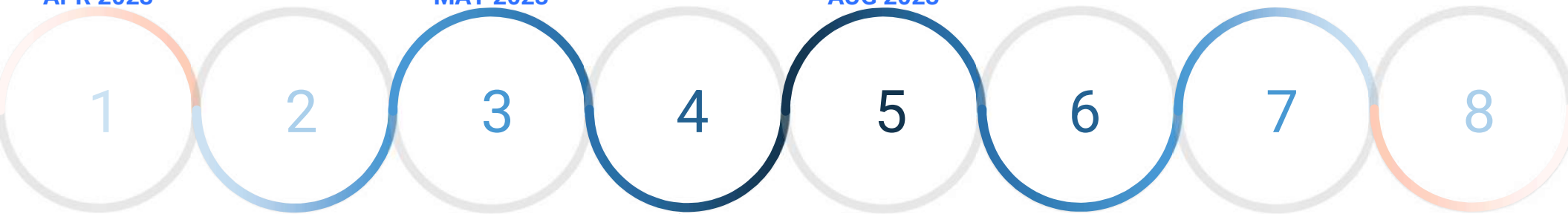








TIMELINE



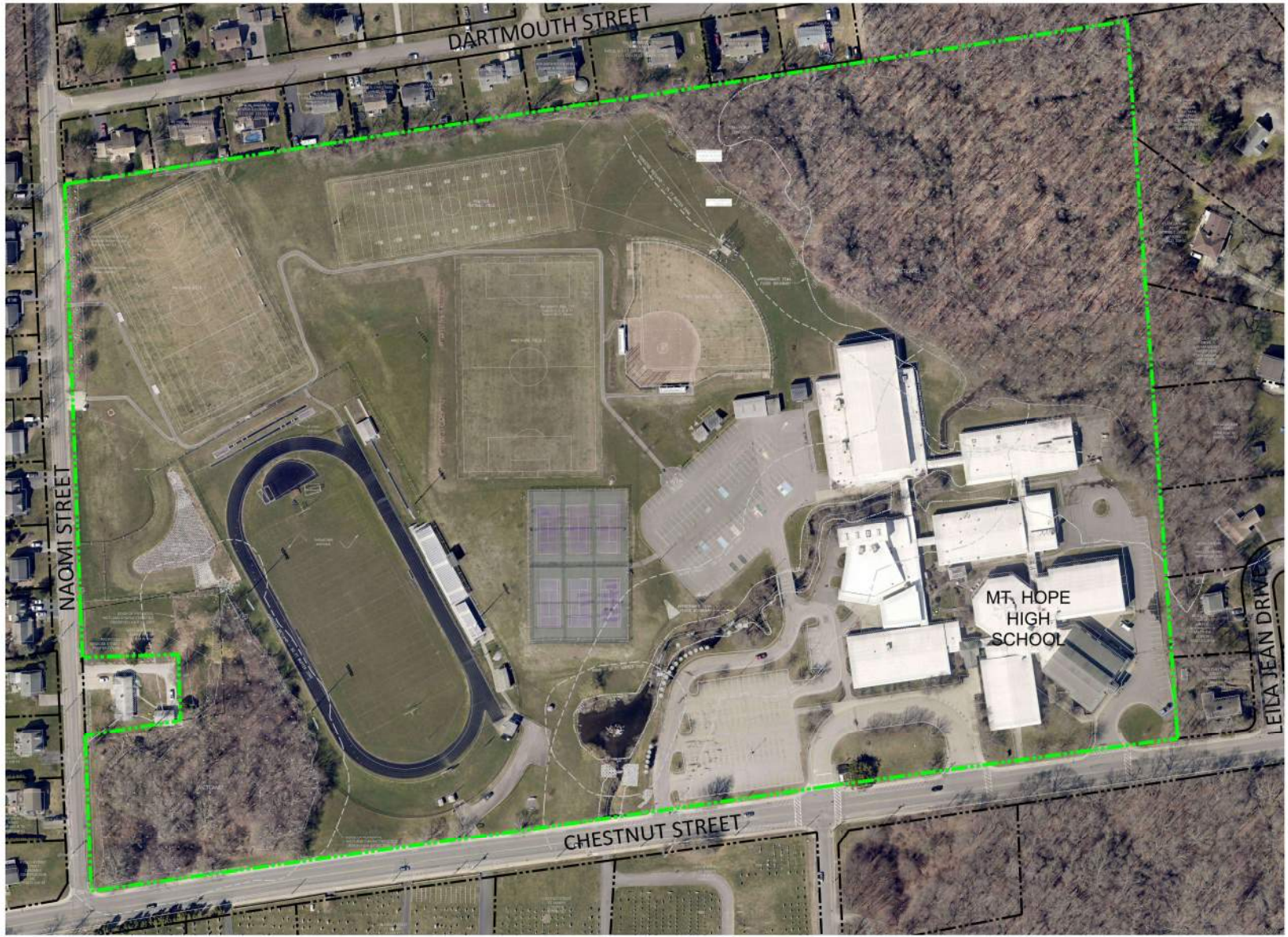
1. **Architect Procurement**
   APR 2023
2. **Departmental Planning & Coordination Meetings**
   MAY/JUN 2023
3. **Existing Conditions Evaluation**
   MAY 2023
4. **Identify Space Needs and Develop Program**
   JUN/JUL 2023
5. **Construction Delivery Method**
   AUG 2023
6. **Schedule, Cost & Budget**
   AUG/SEP 2023
7. **Detailed Design**
   2024
8. **Construction**
   TBD



PART 2:
STORMWATER MANAGEMENT FOCUS

PMA Consultants | PERKINS EASTMAN

Existing Aerial View




Bristol, RI
Contact
Search
Abutters
Layers
Silver Creek


Bristol, RI
Contact
Search
Abutters
Layers
#199
#199
#101
#103
#1014
#95
#4
#91
#70
#97
#96
#229
#235
#24
#10
#11
#12
#27
#01
#10
#5
#7
#8
#6
#3
Paul Park
LOIS AVE
DITTEMORE AVE

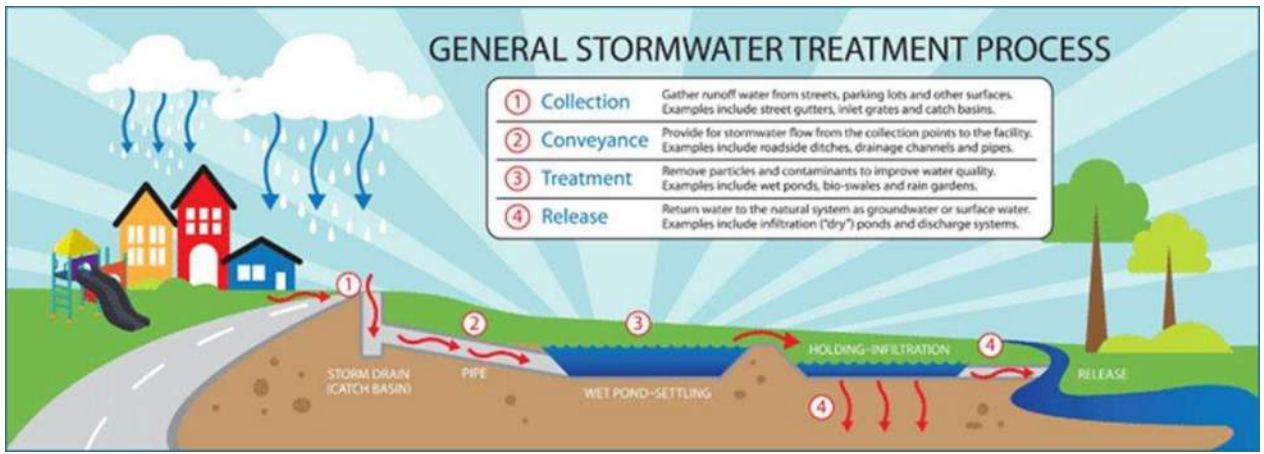

Bristol, RI
Contact
Search
Abutters
Layers
Silver Creek
3
14.26 ac
#199
#14
51
38895 sf
#12
52
45755 sf
#10
53
54 #8
16050 sf
22
15481 sf
#229
60'
55'
50'
45'
65'


Bristol, RI
Contact
Search
Abutters
Layers
DARTMOUTH ST
NAOMI ST
#4
#5
#8
#9
#14
#18
#19
#20
#28
#36
#38
#199
#17
#15
4
9.07 ac
5
80'
75'
70'
65'
60'
55'
50'
45'

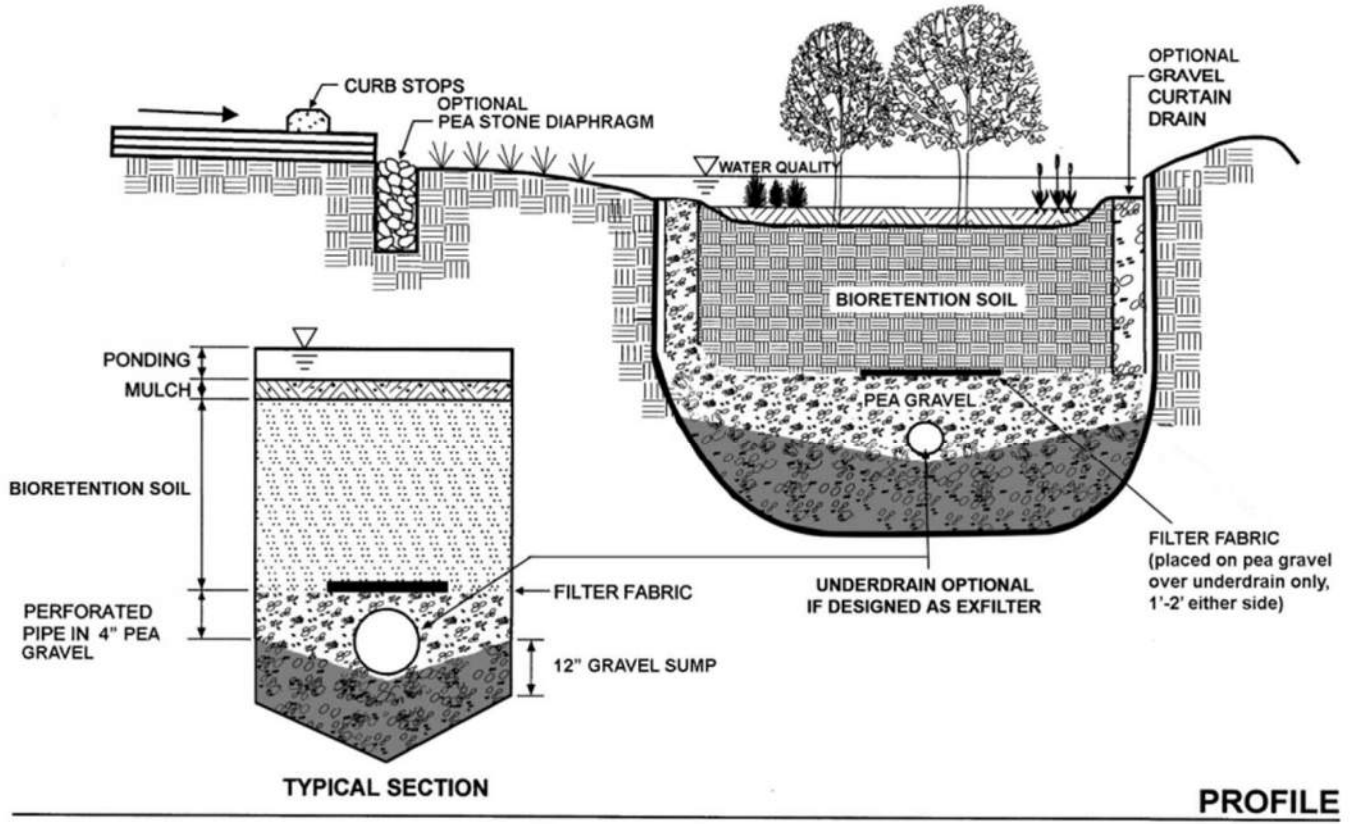

Bristol, RI
Contact
Search
Abutters
Layers
#17
97
#15
96
#11
95
#9
90
#7
91
#5
#81
13
1.91 ac
#101
94
15000 sf
93
#103
15150 sf
7
26779 sf
STORMWATER EASEMENT
#10
#199
5
14.19 ac
6
7.08 ac
CHESTNUT ST

Stormwater Management System Process

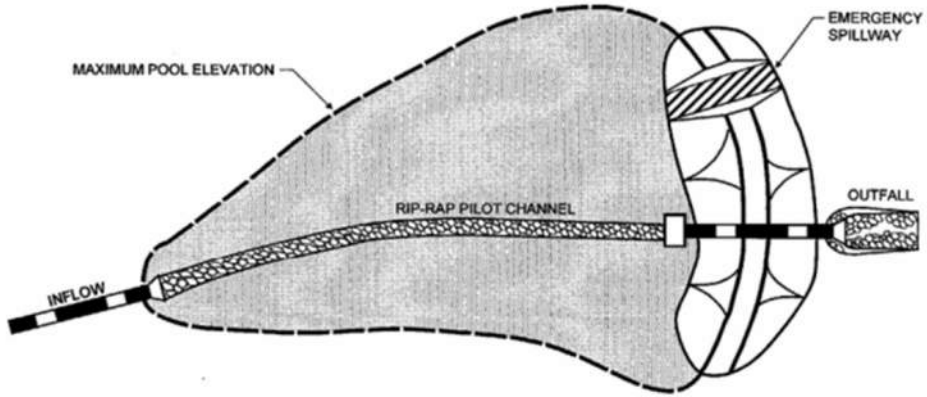
- Collect and transport stormwater (a.k.a. rainwater)
- Provide stormwater treatment with the settling and removal of sediments
- Infiltrate stormwater to allow stormwater to seep into the ground
- Detain stormwater in basins to hold it onsite during major rain events
- Discharge any remaining stormwater at a slow and controlled rate



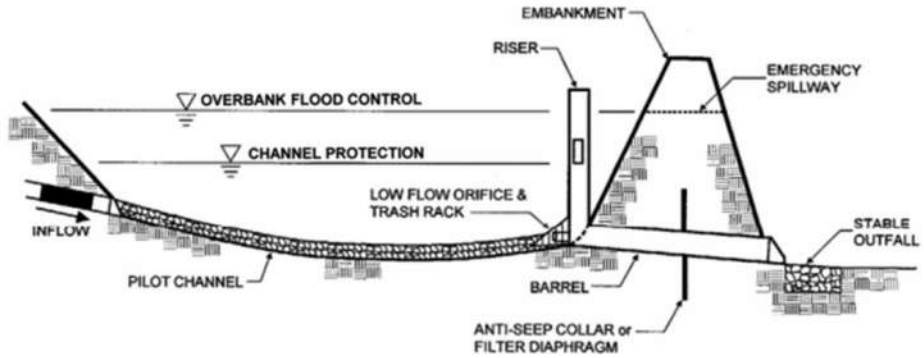
Collection → Conveyance → Treatment → Infiltration / Detention → Discharge



Adapted from MDE, 2000



PLAN VIEW



PROFILE

Adapted from MDE, 2000

Photos of Example Stormwater Management Systems



Detention Basin



Tree Box Filter



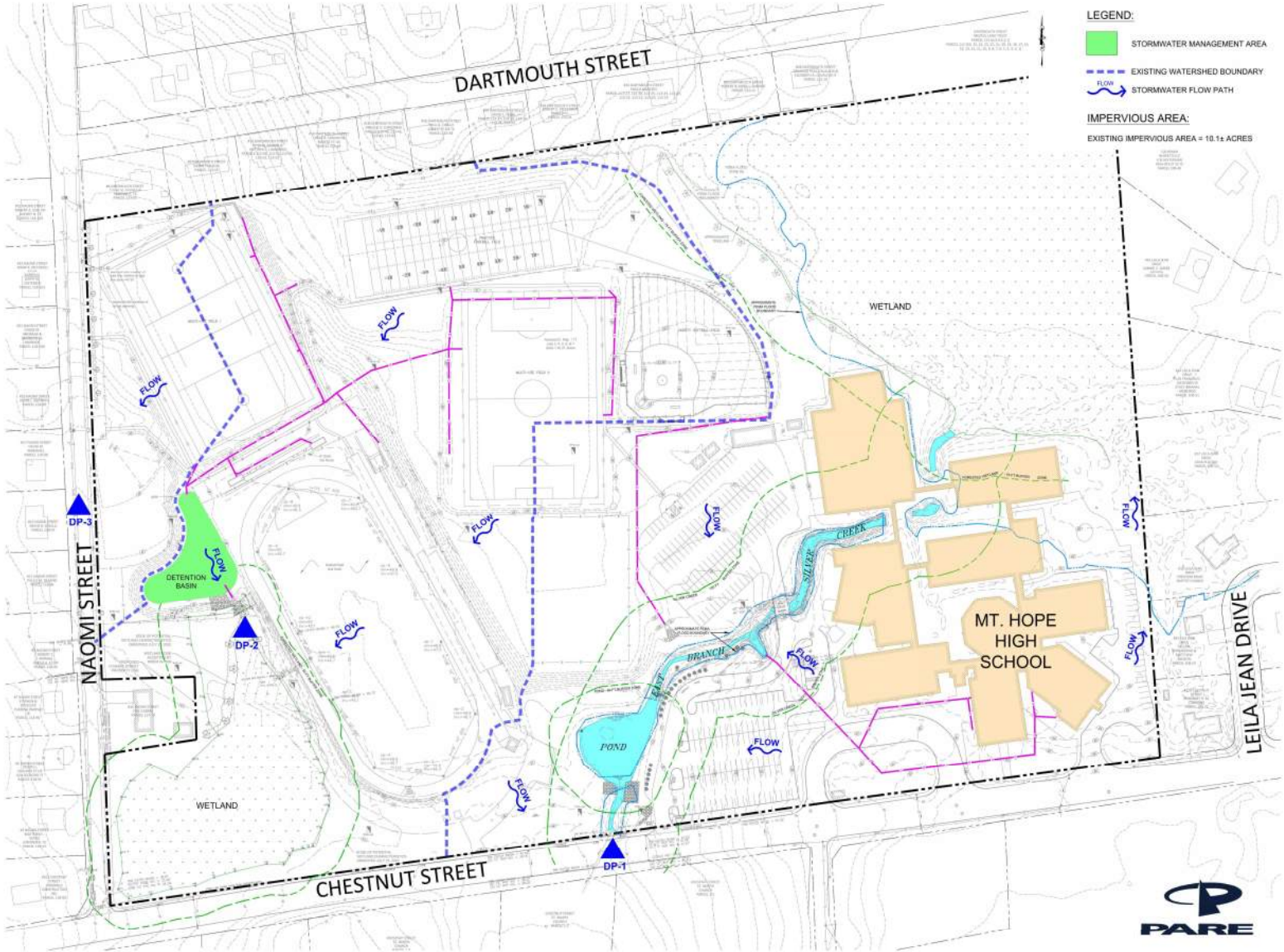
Bioretention Area



Sand Filter

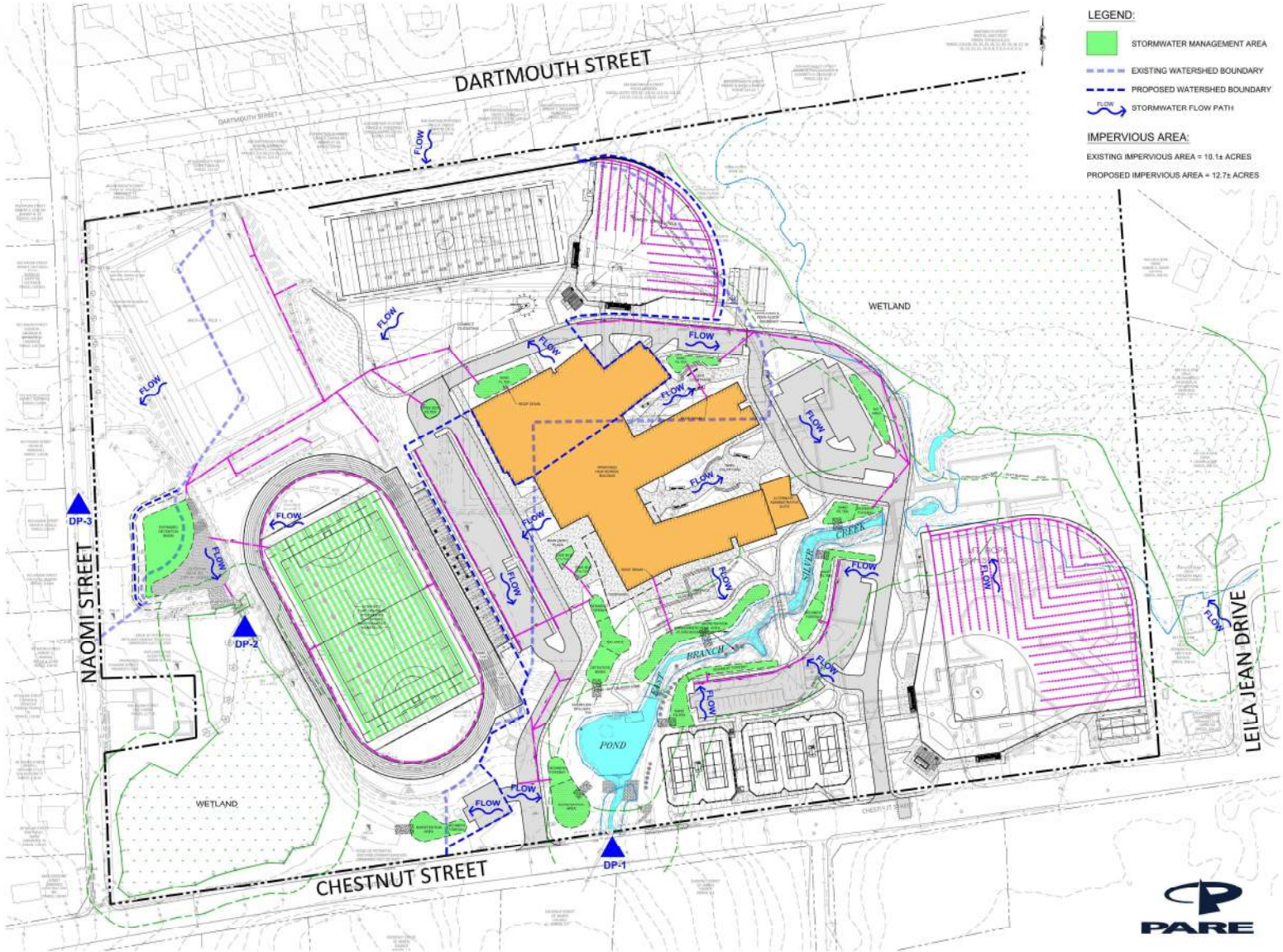
Stormwater Management - Existing

- Roof and pavement areas flow directly into Silver Creek
- Only one stormwater management area.

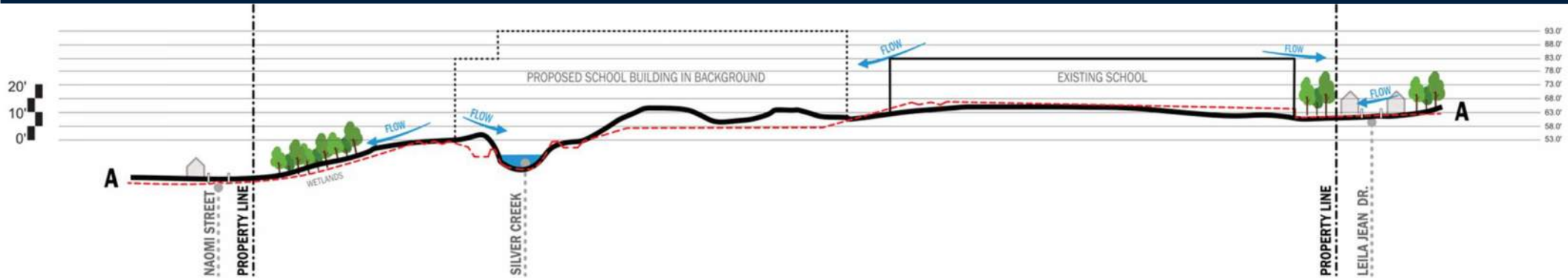


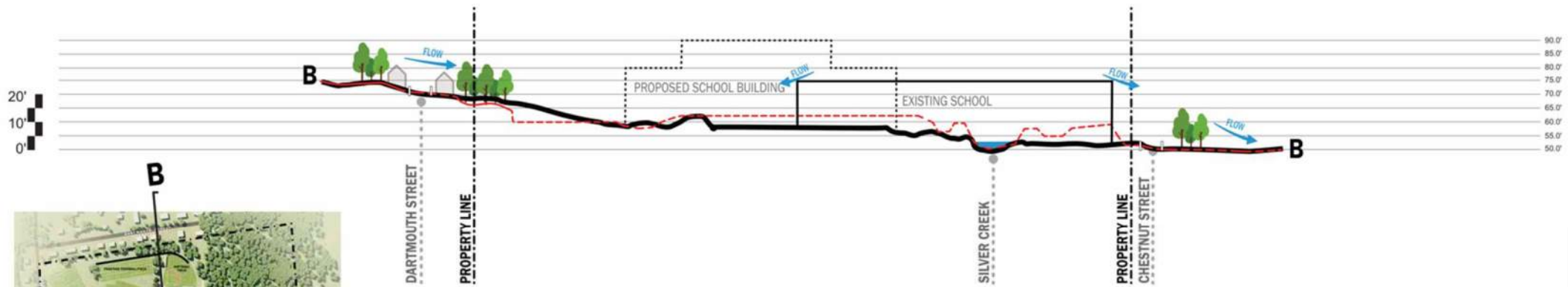
Stormwater Management - Proposed

- Improvement to current condition
- Stormwater management features
- Restoration of vegetation at the creek
- Keeping out of the floodplain
- Addressing the high water table



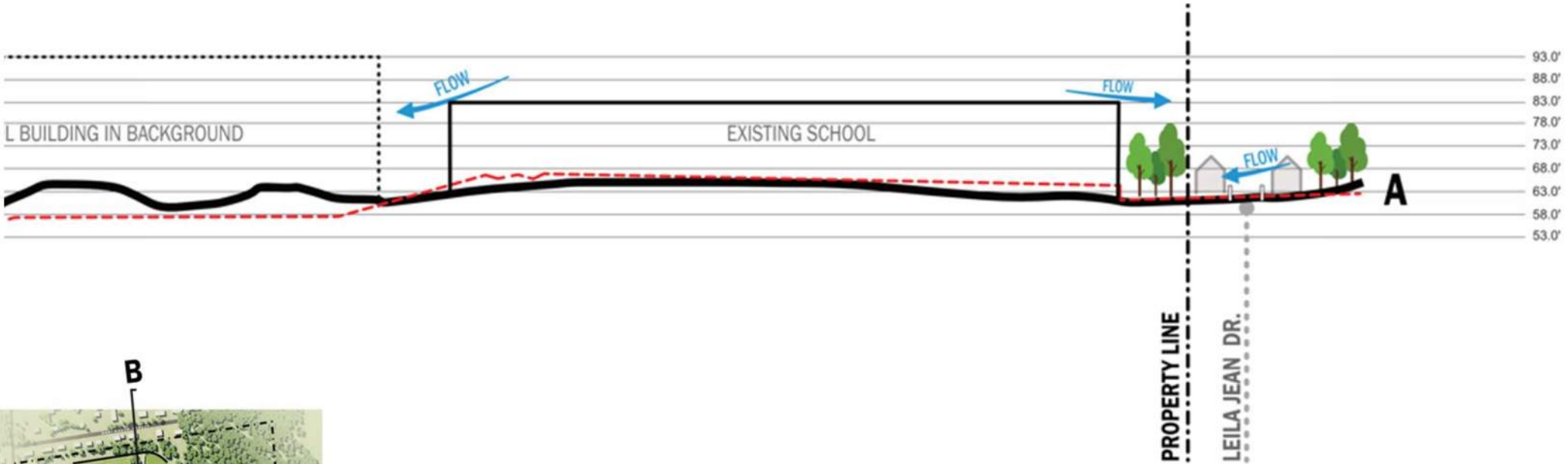
SITE SECTIONS





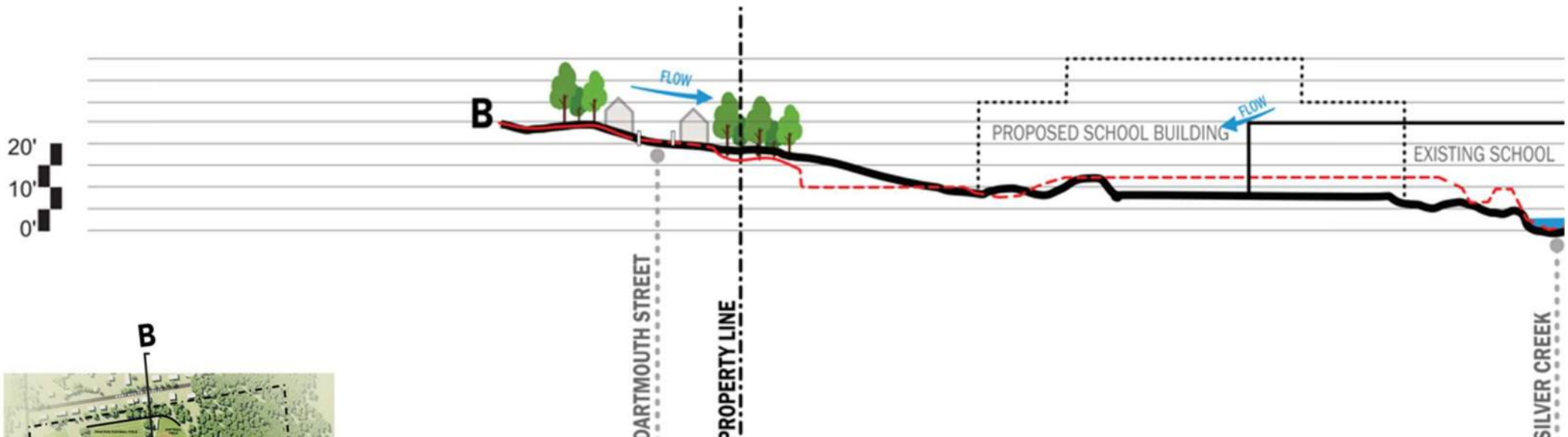


SITE SECTION – LEILA JEAN DRRIVE





SITE SECTION – DARTMOUTH STREET





NEXT STEPS – STORMWATER DESIGN PROCESS

- Updated existing conditions plan
- Delineate wetlands on MHHS site near Leila Jean Drive
- Site walk with abutters to understand specific concerns
- Conduct additional test pits
- Develop stormwater management design
- Local and state permit process with the Town of Bristol and RIDEM


BRISTOL WARREN
RHODE ISLAND
REGIONAL SCHOOL DISTRICT
PMA Consultants
Est. 1971
PERKINS EASTMAN

THANK YOU!