TOWN OF BRISTOL, RHODE ISLAND

TECHNICAL REVIEW COMMITTEE

Technical Review Committee Agenda
Wednesday, October 02, 2024 at 11:00 AM
Community Development Office Conference Room, 235 High Street, 1st Floor, Bristol, RI 02809

A. Pledge of Allegiance

B. New Business

B1. Review and provide recommendations to the Planning Board on the new materials for the Master Plan Phase of the Major Land Development application.

New materials submitted in response to the Planning Board's request for additional information. Proposal to construct a new Mt. Hope High School, including new tennis courts and athletic fields, at **199 Chestnut Street** and to demolish the existing high school building. Owner: Town of Bristol / Applicant: Bristol Warren Regional School District/Lisa Pecora, Perkins Eastman, applicant representative. Zoned: Public Institutional. Assessor's Plat 117 Lots 3-7

C. Adjourn

Date Posted: September 26, 2024

By: mbw

Engineers Scientists Planners
parecorp.com

PARE CORPORATION

September 25, 2024

Town of Bristol
Attn: Community Development Department
235 High Street - 1st Floor
Bristol, RI 02809

Re: **Master Plan – Supplemental Information**
Mt. Hope High School
199 Chestnut Street
Bristol, RI
(Pare Project No. 23099.01)

Dear Members of the Planning Board:

On behalf of the Bristol Warren Regional School District (BWRSD), Pare Corporation is pleased to submit the supplemental information requested by the Planning Board during the September 12, 2024 Planning Board Meeting. BWRSD seeks Master Plan approval for the Mt. Hope High School (Mt. Hope) project, which includes demolition of the existing building and the construction of a new high school. The supplemental information consists of the following:

- Twelve (12) copies of the revised Master Plan sheets (11”x17”)
- Twelve (12) copies of the Supplemental Information Documents
  - Attachment 1 - Parking Data prepared by PMA Consultants
  - Attachment 2 - Event Parking Figure prepared by Pare Corporation
  - Attachment 3 - Additional Irrigation, Well System Design and State Permitting Letter prepared by Aqueous Consultants
  - Attachment 4 - Rainwater Harvesting Memorandum prepared by Traverse Landscape Architects
  - Attachment 5 - Synthetic Turf Memorandum prepared by Traverse Landscape Architects

On September 12, 2024 the Mt. Hope High School project was presented to the Planning Board. Please see the responses below to answer the questions raised during the Planning Board Meeting.

OFF-STREET PARKING
In response to concerns regarding the proposed 240 off-street parking spaces, the revised Master Plan Sheet C3.0 proposes 248 parking spaces. The existing high school has 281 parking spaces. BWRSD has determined that 248 parking spaces satisfies the future high school needs for the school day by providing parking spaces for the 122 staff members, 10 visitors and 116 students who are permitted to park on site. BWRSD anticipates the Master Plan will provide adequate parking spaces for the high school’s operations and special events. Supplemental information to support the number of proposed parking spaces is included below:

- The Owner’s Representative performed two field reviews to note available on-site parking. Attachment 1 summarizes the parking data collected by the Owner’s Representative on 09/13/2024 at 10:45AM and 09/19/2024 at 11:00AM.

- In an effort to reduce impervious surface, meet the Rhode Island Department of Education (RIDE) standards, and provide adequate parking distribution around the site, BWRSD determined that the 248 parking spaces is adequate for the operations of the school during the school day and special events.

- Per the Code of Ordinance section 28-252.c, the high school is required to have a minimum of 226 off-site parking spaces. Per the Town of Bristol Code of Ordinance section 28-252.a "the maximum number of off-street parking spaces allowed for any lot or use shall not exceed ten percent". Based on section 28-252.a the maximum parking spaces is 248 off-street parking spaces. The Master Plan is revised depicting an additional 8 parking spaces to be at the maximum capacity for the site per the Code of Ordinance.

- Attachment 2, presented in the Planning Board meeting on September 12, 2024, depicts the off-street parking available for the variety of anticipated athletic and cultural events.

- During events, additional parking is available on Chestnut Street and within a gravel lot at Paull Park. These two locations offer the public an additional 100 parking spaces.

FLOODPLAIN

The Master Plan dated September 4, 2024 depicts the limits of the regulatory floodplain as defined within the FIRM Panel xxx dated July 7, 2014. The Planning Board requested the design team confirm this is the latest available flood plain information and explore other published flood studies to determine whether additional information is available for use during the design.

- The flood limits depicted on the Master Plan, taken from FIRM Panel No. 44001C0014H, represent the latest available flood mapping and applicable per the Town of Bristol Code of Ordinances. Per the Town of Bristol Code of Ordinance Section 28-302 and Section 29-303 on "Developments in Areas of Special Flood Hazards" defines the applicable flood boundary as "the official map of a community on which the Federal Emergency Management Agency (FEMA) has delineated the limits of the regulatory floodway and 100-year floodplain". The FEMA effective floodplain map (Panel No. 44001C0014H) is the regulatory limit issued by FEMA and adopted by the Town of Bristol as defined as "the official map of a community on which the Federal Emergency Management Agency (FEMA) has delineated both the special flood hazard areas (100-year floodplain) and the insurance risk premium zones applicable to a community." The limits adopted by the Town on July 7, 2014 were established and published in the 2014 Flood Insurance Study (FIS) which is defined in section 29-303 as "the official study of a community in which the Federal Emergency Management Agency (FEMA) has conducted a technical engineering evaluation and determination of local flood hazards, flood profiles and water surface elevations. The flood insurance rate maps (FIRM), which accompany the FIS, provide both flood insurance rate zones and base flood elevations, and may provide the regulatory floodway limits."

- Pare contacted BETA Engineering (BETA) on September 20, 2024 regarding the 2007 Silver Creek Drainage Study. Per BETA, the Study did not include submitting a Letter of Map Revision to FEMA for the Silver Creek Watershed or updated floodplain limits at the Mt. Hope property. The study provides a one-dimensional, steady-state HECRAS model developed to identify potential hydraulic restrictions along Silver Creek. The Study does not include information that would supersede the FEMA Flood Mapping depicted in the Master Plan.

- The Design Team reached out to Shelia Warren from the U.S. Army Corps of Engineers (USACE) New England District regarding the Floodplain Management Services Program's special study of the Silver Creek Watershed. In correspondence on 09/20/2024, the USACE stated they recently began the project and will share preliminary data if available. At this time, the Study does not include information that would supersede the FEMA Flood Mapping depicted in the Master Plan.

The project proposes to remove the existing building from the floodplain and build the new high school outside of the floodplain. By removing the building from the floodplain this will reduce the risk of property damage for BWRSD, improve site conditions for community members and provide a more resilient design for a community building.

The development proposed within the floodplain will result in no net loss of storage volume within the floodplain. Currently 12,700 SF of the baseball field is proposed within the existing floodplain. Compensatory storage will be provided to ensure no volume capacity is lost within the floodplain. Grades within the floodplain will be provided at the Preliminary Plan Submission.

STORMWATER MANAGEMENT

The proposed development depicted on the Master Plan will significantly improve the quality of stormwater management discharged from this site and will result in improvements to the Silver Creek Watershed. The existing conditions include large impervious parking areas with no water quality treatment, limited groundwater recharge, and minimal peak flow mitigation. There is one stormwater best management practice, a detention basin, designed to manage peak flows for the drainage patterns to the west of the site. Currently stormwater discharged from the eastern portion of the site flows directly to Silver Creek. The proposed conditions will significantly improve stormwater quality, reduce peak flow, and manage runoff volume up to the 10-year storm as required by the Town of Bristol's Subdivision and Development Review Regulations for the Silver Creek Watershed through the following:

- Providing water quality treatment for impervious surfaces, including roof, parking areas, walks track, and synthetic turf field. This will be a great benefit to the health of Silver Creek and the natural resources by removing pollutants.
- Providing groundwater recharge through filtering best management practices (BMPs) and underground infiltration chambers. Infiltrating stormwater runoff where possible will reduce runoff volume discharged to Silver Creek and be a great benefit to the project site by infiltrating stormwater runoff to help remove stormwater volume.
- Providing peak flow mitigation through BMP's that will hold water during storm events and slowly release over time. Attenuating peak flows will be achieved using BMPs such as detention basins, gravel wet vegetated treatment systems, and underground infiltration systems.

All new stormwater collection, storage, and treatment systems will be designed and constructed in accordance with the State of Rhode Island Storm Water Design and Installation Standards Manual (RISDISM) prepared by the Rhode Island Department of Environmental Management (RIDEM) dated December 2010 and amended March 2015 and the Town of Bristol's Subdivision and Development Review Regulations section F.2.I.2.e "To the maximum extent practicable as agreed upon by the Planning Board Engineer and the applicant's engineer, any increase in storm runoff volume, up to and including the 10-year storm event, shall be retained and recharged on site as close as feasible to its place of origin by

means of detention ponds or basins, seepage areas, subsurface drains, porous paving, or similar low impact design techniques. This shall be required within the Tanyard Brook and Silver Creek watersheds and encouraged to the extent practicable in other areas of Bristol."

The Master Plan is revised depicting a large underground infiltration system comprised of chambers, pipe, and crushed stone that will store and slowly infiltrate stormwater into the underlying soils. The underground infiltration system, combined with infiltration in other BMP's, will result in no increase to runoff volume in the 10-year design storm.

The Design Team revised the Master Plan with reduced impervious surfaces to help mitigate concerns regarding stormwater runoff. The reduction is achieved by reducing sidewalk widths, providing compact parking spaces where allowed by the Town of Bristol Code of Ordinances, and minimizing pavement where feasible.

PUBLIC OUTREACH

Since Fall 2023, BWRSD implemented various methods of community outreach, engagement and meetings with neighboring properties. Below is a list of past meetings that allowed abutters and community members opportunities to learn about the progress of the Mt. Hope High School project and discuss concerns.

- Community Forum I – October 2, 2023
- Abutters Meeting I – October 11, 2023
- Community Forum II – November 1, 2023
- Public Meeting – September 12, 2024
- PMA Consultants Property walk – September 13, 2024
- Abutters Meeting II – September 16, 2024

During the Community Forums and Abutter's Meeting , abutters voiced concerns with floodplain management, stormwater management, construction activities, and site feature locations. BWRSD, with the support of the Design Team, will continue the public outreach effort. The Master Plan reflects the concerns of the abutters at this level of design. Following Master Plan, more details regarding the stormwater management system will be available to support more specific discussions.

On behalf of BWRSD, we would like to request a Technical Review Committee meeting on October 2, 2024 to discuss the project and supplemental information provided in more detail. Should you have any questions or require additional information, please feel free to contact our office at (401) 334-4100.

Sincerely,

David L. Potter, P.E.
Vice President

DLP/ACB/dp

Attachments

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 1

Parking Data prepared by PMA Consultants

Data point #2:

9/19/24 @ ~11:00AM

107 vacant spaces, (74 student + 33 teacher)

Chad Crittenden
PMA Consultants
p: 781.519.1076

From: Chad Crittenden <ccrittenden@pmaconsultants.com>
Sent: Friday, September 13, 2024 12:22 PM
To: Lisa Pecora <L.Pecora@perkinseastman.com>; Joe Drown <j.drown@perkinseastman.com>; David Potter <DPotter@parecorp.com>; Annelise Boylan <aboylan@parecorp.com>; 'Kris Bradner' <kbradner@traversela.com>
Cc: Bristol Warren <BristolWarren@pmaconsultants.com>
Subject: BWRSD - MHHS Parking Counts

9/13/24 @ ~10:45AM

Photos/data from this morning courtesy of Chris Loeffler

84 vacant spaces, (63 student + 21 teacher)

Chad Crittenden
Managing Director

PMA Consultants
35 Braintree Hill Office Park, Suite 300
Braintree, MA 02184
p: 781.519.1076 | f: 781.794.1405
www.pmaconsultants.com


1PG 186


STOP


SANTA FE
3.5L
Rhode Island
EG 38
Ocean State


AVALANCHE
BE-54766

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 2

Event Parking Figure prepared by Pare Corporation

Event Parking Figure

Special Event Parking Table

Special Event Use	Seats	Parking Rate	Unit	Total Parking Spaces	Source
Theater	402	0.33	per seat	133	Bristol Zoning Ordinance 28-252 (theater and auditorium)
Football Bleachers*	1446	0.2	per seat	290	Bristol Zoning Ordinance 28-252 (outdoor recreation facility)
Baseball Bleachers	150	0.2	per seat	30	Bristol Zoning Ordinance 28-252 (outdoor recreation facility)
Softball Bleachers	150	0.2	per seat	30	Bristol Zoning Ordinance 28-252 (outdoor recreation facility)
Gym (basketball)	456	0.2	per person	92	Bristol Zoning Ordinance 28-252 (outdoor recreation facility)
Gym (graduation)	960	0.33	per seat	317	Bristol Zoning Ordinance 28-252 (theater and auditorium)

*Actual capacity of bleachers is to be determined as Athletic Field design progresses

PARKING SUMMARY

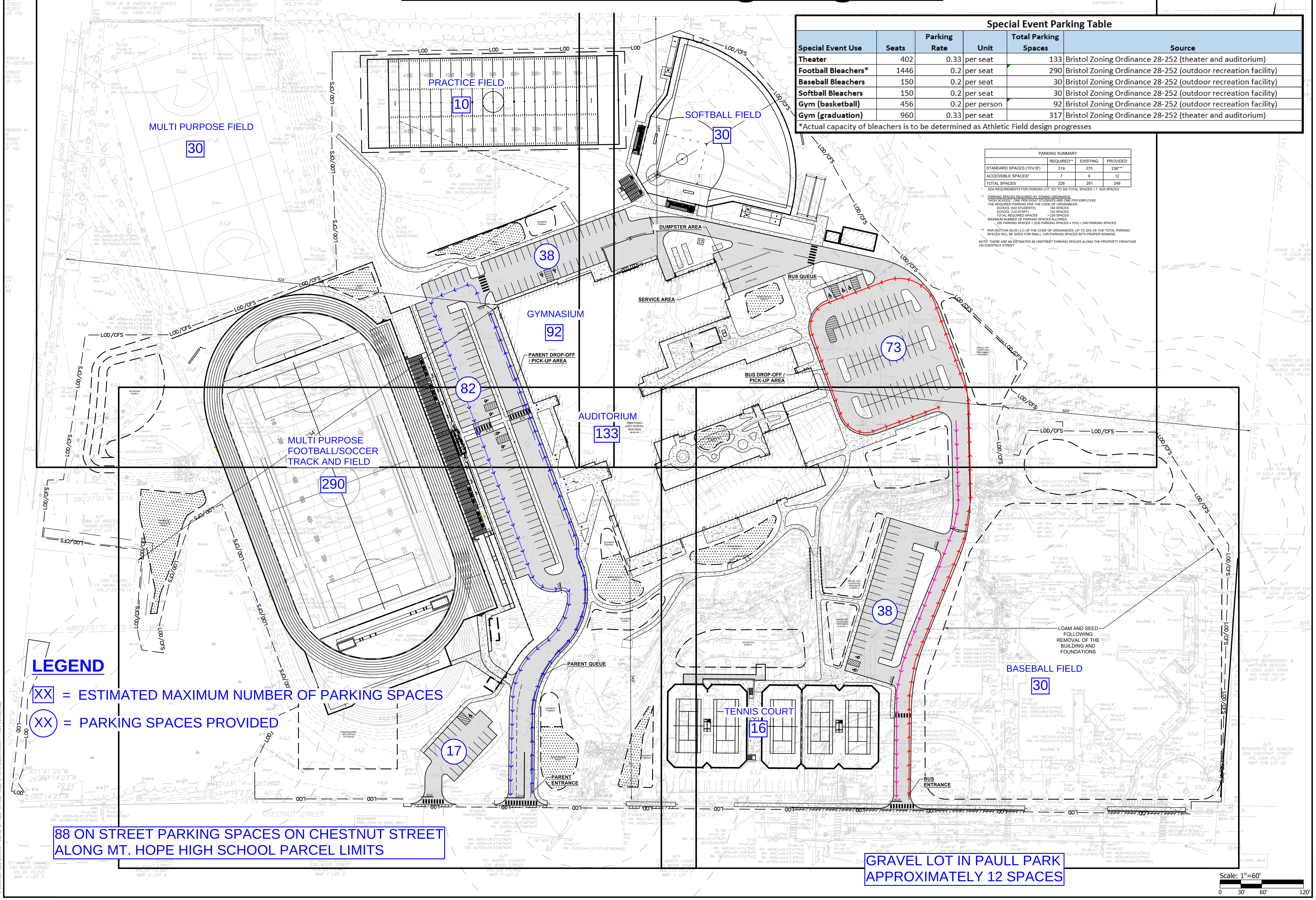
	REQUIRED**	EXISTING	PROVIDED
STANDARD SPACES (10'x18')	219	275	236***
ACCESSIBLE SPACES*	7	6	12
TOTAL SPACES	226	281	248

* ADA REQUIREMENTS FOR PARKING LOT: 201 TO 300 TOTAL SPACES = 7 ADA SPACES

** PARKING SPACES REQUIRED BY ZONING ORDINANCE:
"HIGH SCHOOL": ONE PER EIGHT STUDENTS AND ONE PER EMPLOYEE
THE REQUIRED PARKING PER THE CODE OF ORDINANCES:
SCHOOL (832 STUDENTS) 104 SPACES
SCHOOL (122 STAFF) 122 SPACES
TOTAL REQUIRED SPACES = 226 SPACES
MAXIMUM NUMBER OF PARKING SPACES ALLOWED:
226 PARKING SPACES + (226 PARKING SPACES x 10%) = 248 PARKING SPACES

*** PER SECTION 28-251.2.C OF THE CODE OF ORDINANCES, UP TO 25% OF THE TOTAL PARKING SPACES WILL BE SIZED FOR SMALL CAR PARKING SPACES WITH PROPER SIGNAGE

NOTE: THERE ARE AN ESTIMATED 88 ONSTREET PARKING SPACES ALONG THE PROPERTY FRONTAGE ON CHESTNUT STREET



LEGEND

XX (square) = ESTIMATED MAXIMUM NUMBER OF PARKING SPACES

XX (circle) = PARKING SPACES PROVIDED

88 ON STREET PARKING SPACES ON CHESTNUT STREET ALONG MT. HOPE HIGH SCHOOL PARCEL LIMITS

GRAVEL LOT IN PAULL PARK APPROXIMATELY 12 SPACES

Scale: 1"=60'
0 30' 60' 120'

PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

MT. HOPE HIGH SCHOOL
199 Chestnut Street
ASSESSOR'S PLAT 117, LOTS 3, 4, 5, 6, & 7
Bristol, Rhode Island

REVISIONS:

1	9-04-2024	MASTER PLAN REV
2	09-25-2024	MASTER PLAN REV

PROJECT NO.:	23099.01
DATE:	AUGUST 2, 2024
SCALE:	1"=60'
DESIGNED BY:	ACB
CHECKED BY:	
DRAWN BY:	AKL
APPROVED BY:	

DRAWING TITLE:
OVERALL CONCEPT PLAN

DRAWING NO.:
C3.0

SHEET NO. 5 OF 10

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 3

Additional Irrigation, Well System Design and State Permitting Letter prepared by Aqueous Consultants

Aqueous

PROJECT 24-0012B

September 19, 2024

Traverse Landscape Architects, Inc.
150 Chestnut Street, 4th Floor
Providence, RI, 02903

RE: Additional Irrigation, Well System Design and State Permitting
Mount Hope High School, Bristol, RI

Please allow this memorandum to briefly outline what Aqueous believes is necessary to achieve a permit and functioning well to supply an irrigation water supply for Mount Hope High School:

- Preliminary Testing of Already Scheduled Geothermal Well Test Program
  - While the already scheduled geothermal well testing pilot program is in operation, log the drilling borehole to demarcate the varying geological strata and understand the extent of the water bearing sedimentary (sandstone) bedrock aquifer.
  - While rigging is already in place subsequently provide preliminary and rudimentary flow testing to assess the response of the underlying sedimentary (sandstone) aquifer.
  - Take results of logs and tests to prepare for pre-construction meeting with RIDEM.

- Perform Fracture Trace Analysis
  - Provide studies by hydrogeologist (subconsultant to Aqueous) to identify potential well locations for options for Owner and RIDEM to consider.
  - Location of potential wells where fractures in bedrock occur will dictate impact on RIDEM Permitting for Water and Wetlands.
    - Wells Closer to Wetlands may impact dewatering more.
  - Fracture Trace Analyses are not guarantees to find water—drilling, development, and testing are required to estimate flow potential.

- Multiple wells may need to be drilled; however, analysis will rank drilling sites by potential to mitigate some of the unknowns.

- **Pre-Application Meeting with RIDEM for a Water Withdrawal Permit**
  - Permit required for withdrawals more than 10,000 gallons per day
    - Mount Hope High School irrigation will require 40,000 – 5,0000 gallons per day
  - Submit Preliminary Log and Testing Information for RIDEM for review
  - Complement preliminary information with a project and objective narrative
  - Collaborate with LEC (Wetland Permitting) to Identify Potential Impacts to Regulated Areas.
  - Convey to RIDEM that irrigation demand is not the same level of demand as a municipal drinking water supply (which is generally the basis of the regulations).
  - After the meeting, RIDEM gives us the parameters for well design, testing information and data required, and path forward.
  - Design of well and testing program takes place after path forward from RIDEM.

- **Well Drilling and Testing Design**
  - Design for an 8-Inch Irrigation Well based on Fracture Trace Analysis and Comments from RIDEM
  - Design for a 2-inch Monitoring Well in Close Proximity to Wetlands to understand:
    - Impact of drawdown of groundwater table with long-term pumping
    - Responsiveness and yield of aquifer to pumping
  - Design Test Program based on RIDEM Comments
    - Drawdown Test
    - Long-Term (48-Hour) Pump Test
    - Water Quality Test
  - Hire Well Drilling Contractor to Drill Wells and Perform Testing (with Portable/Temporary Power and Temporary Well Pumps).
  - Collect and Analyze Data and Prepare Final Report to RIDEM.
  - RIDEM reviews data and, depending on results, allows desired pumping rate based on internal analysis or allows some percentage of tested flow rate.

- Well Pump, Accumulation/Stormwater Tank, and Irrigation Connection Design
  - In order to meet 100% Construction Documents for Public Bid in January 2025, this work needs to start immediately, taking the chance by designing concurrently while permitting with RIDEM.
  - RIDEM approves the well testing performed and dictates the flow rates allowed, Aqueous can pivot to modify the design accordingly for the drilled 8-inch well.
  - Coordination is required between Aqueous (Irrigation and Wells), Traverse (Landscape Architect and Sports Field Designer), Pare Corporation (Civil/Stormwater Engineer), and Electrical Engineer (Power to Equipment).
  - Drawings, details, and specifications are required for Well Pump System and Accumulation/Stormwater Tank.

In essence, to have a chance of having a well, well pump, and tanking system within the final bid construction document package for the end of January 2025, design work needs to be concurrent with permitting, using some base assumptions. These processes must start **immediately**. After permitting and testing, the design can be modified based upon the results (including total denial of well drilling and pumping–forcing the use of domestic water only).

If you have any questions, please do not hesitate to contact me. We appreciate the opportunity to pursue well water for the irrigation system at Mount Hope High School but want to again stress that much is required to do in a very short period of time before construction bid documents are due.

Sincerely,

Michael Igo, PE, LEED AP, CID
President

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 4

Rainwater Harvesting Memorandum prepared by Traverse Landscape Architects

TRAVERSE
landscape architects

Memorandum
Project: Mt Hope High School
Subject: Narrative for Rainwater Harvesting
Date: 9/25/2024
To: David Potter, PARE Corporation

This memo has been prepared to provide information to the Technical Review Committee of the Town of Bristol, RI. It is the intent that the information will ultimately be presented at the October 10, 2024 Planning Board Meeting for Master Plan Approval for the new Mt. Hope High School building project.

In addition to the Mt. Hope High School stormwater management design and calculations provided by your office and the irrigation well testing and design provided by our subconsultant Aqueous Consultants; there is another approach that we would like to identify here that can have added value to the project as it relates to water management.

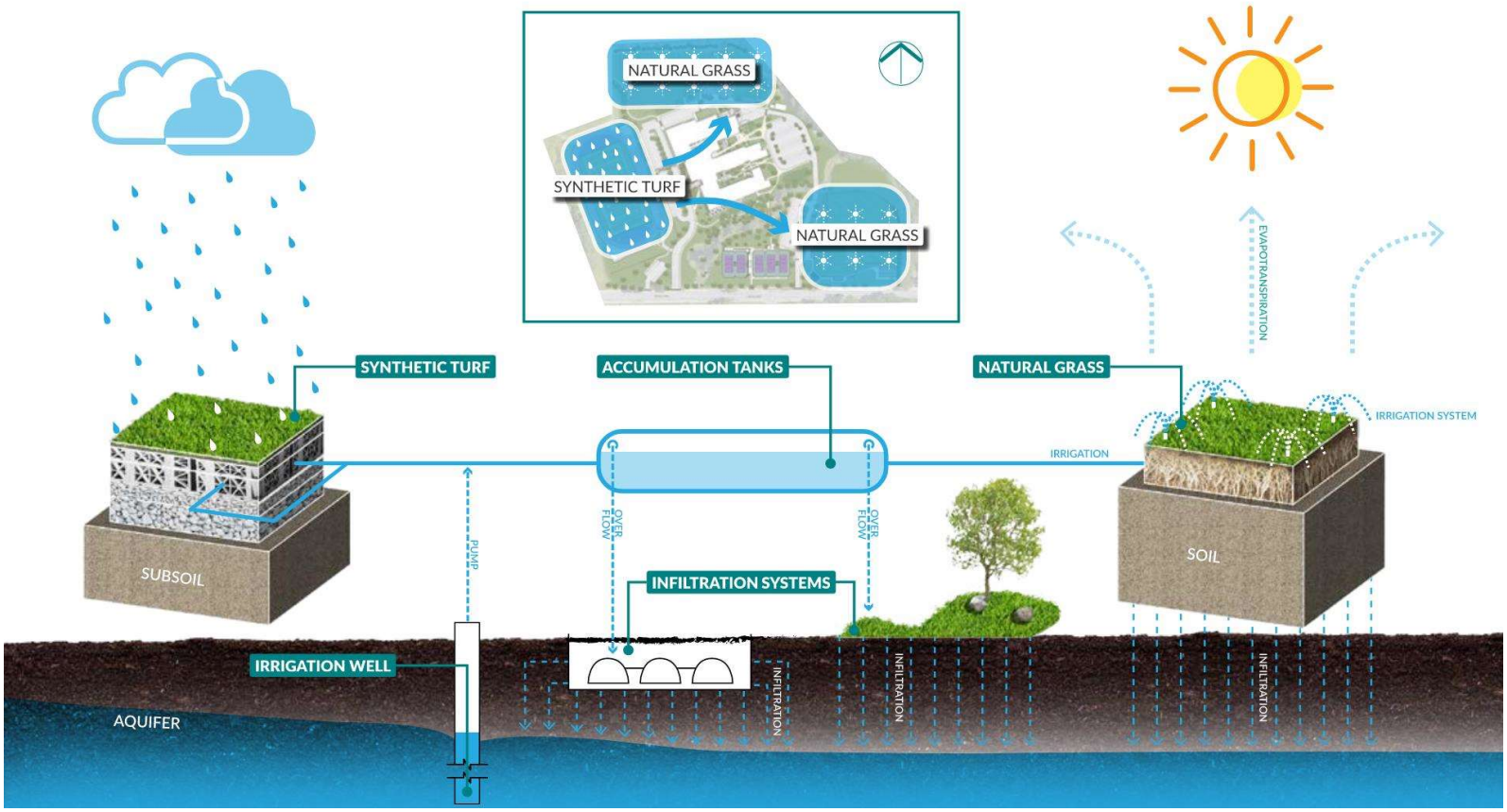
The concept involves harvesting rainwater also referred to as stormwater harvesting for the purpose of re-using or recycling the water for another important need – irrigating the natural turf athletic fields. This concept can provide several important benefits.

1. The Town of Bristol Regulations requires no increase in runoff for a 10-year storm event in the watershed where the project is located. This is a challenging site to infiltrate due to the poorly drained soils observed throughout the site. *Refer to the Master Plan Report provided by PARE Corporation.* Coming up with alternative and innovative solutions to infiltrate can benefit the project. Harvesting the stormwater and reusing it for irrigation allows for disposal and recharge of stormwater at a much more controlled rate across the site.

2. The School District has requested the A/E team to look into testing for and designing a well to pump water from below ground and use for irrigation to take the burden off of the district paying for water through the Bristol Water District. This requires applying for a withdrawal permit and ensuring that harvesting water from below ground will not impact nearby natural resources, wetlands and floodplain, and will not draw in seawater that will be deleterious to turfgrass fields. By harvesting water from rain events, we essentially put less pressure on withdrawing water from below ground.

3. The overarching, two-pronged approach noted above also has other added benefits including environmental and budget resourcefulness as well as meeting the athletic programming needs of the school. These include the following highlights:
    - An accumulation tank(s) will be required to store water and is included in scope for designing an irrigation well. This same tank(s) can be used to store harvested water.
    - There is a potential to reduce the amount of underground infiltration systems needed. **This benefit will not be realized until further design and testing and therefore not included in any permitting application at this time.*
    - On a rainy day, the irrigation system is not used the fields receive free water and the tank accumulates the excessive runoff to use for another day.
    - The synthetic turf field which is the primary rain water harvesting collector allows for over 3,000 annual hours of use, equating to the school being able to support a new field hockey team, can lead to revenue by renting the facility, and other programming needs outlined by the school.

4. The design of this system and all the other water systems noted herein will continue to be studied, tested and evaluated leading up to Preliminary Plan Approval for further review by your team. We greatly appreciate the opportunity to present these concepts that have a benefit to the school project and the community. Below is a graphic representing these systems conceptually.



End Memorandum

Bristol Warren Regional School District

MT. HOPE HIGH SCHOOL

Attachment 5

Synthetic Turf Memorandum prepared by Traverse Landscape Architects

TRAVERSE
landscape architects

Memorandum
Project: Mt Hope High School
Subject: Narrative for Synthetic Turf
Date: 9/25/2024
To: David Potter, PARE Corporation

This memo has been prepared to provide information to the Technical Review Committee of the Town of Bristol, RI. It is the intent that the information will ultimately be presented at the October 10, 2024 Planning Board Meeting for Master Plan Approval for the new Mt. Hope High School building project.

During the September 12, 2024 Planning Board Meeting there were a list of concerns that Board members had regarding the use of synthetic turf for the track and field replacement. Below outlines these items and further explanation. These items were reviewed at a recent School Building Committee as well where a few Planning Board members were present.

1. Concern about synthetic turf having PFAS (per and polyfluoroalkyl substances). The simple answer to this concern is that this project will fall under the laws meeting the State of Rhode Island General Assembly Legislation (2024-H 7356Aaa, 2024-S 2152Aaa). There are manufacturers who are now supplying turf carpet without ingredients containing PFAS responding to nation-wide demand.

2. Concern about metals and other contaminants from infill material leaching into natural resources. The crumb rubber infill, depending on it's source and makeup, is generally the source. This project will have a natural ingredient based infill called Brockfill (https://www.brockusa.com/athletes-matter-brockfill/). It's made up of harvested Southern Yellow Pine and has the added benefit of reduced heat on a field which was also a concern brought up by the Planning Board.

3. Concern about bacteria in fields. Several studies have been conducted relative to potential bacterium such as Staphylococcus aureus capable causing infections or diseases spread by contact with synthetic turf. Relative to infilled synthetic turf surfaces installed in outdoor environments the survival rate of bacteria is very low. This is due to the higher temperatures and the presence of Ultra Violet light in the outdoor environment. There are several products made to be applied topically to synthetic turf as a "disinfectant or anti-microbial" these have been shown to have no added benefit in outdoor environments because the bacteria can not survive long enough in the higher temperatures and UV exposure. Refer to the Penn State Study "Survival of Staphylococcus Aureus on Synthetic Turf" for more information. https://extension.psu.edu/survival-of-staphylococcus-aureus-on-synthetic-turf

4. Concern about higher incident of injuries on synthetic turf. Any synthetic turf system designed as part of the Mt. Hope High School project will be required to meet the standards of World Rugby Regulation 22, FIH and FIFA. These organizations have combined resources to identify best practice for multi-use long pile community-based fields and provide information to facility owners, managers and investors in ensuring that their fields reflect best practices in the areas of player welfare, performance, sustainability and longevity. This standard is known as "One Turf" and the testing documentation is attached. Many of these standards and tests are derived from and are also used for certification of natural grass fields.

   We would recommend testing of the existing natural grass fields in the School District as a reference data set for comparison to synthetic turf (ie would your existing natural grass fields pass the One Turf standard)

   All of this testing for safety and performance represents a snapshot in time. Sporting surfaces are dynamic and their conditions change, sometimes quickly. Maintenance is as key with synthetic turf as it is with any sporting surface. Maintenance and proper footwear/equipment are the biggest factors in mitigating injury risk for student athletes.
   End of Memorandum (see Attachment)

One Turf – Tables of Testing

WORLD RUGBY

Parameter	Test Method	Minimum Value	Maximum Value
Shock Absorption	AAA Version (FIFA Method)	55%	70%
Vertical Deformation		5mm	11mm
Rotational Resistance	EN 15301-1 (football studs)	25Nm	50Nm
Impact Attenuation (HIC)	EN 1177	1.3m	-
Ball Roll (large ball)	FIFA Method	-	12m
Vertical Ball Rebound (large ball)	EN 12235 (absolute)	0.6m	1.0m
Evenness (Surface Regularity)	EN 13606 (3m straight edge)	-	10mm
Slope	Surveyor's Level		1%

Performance Tests

WORLD RUGBY

Item B1.

Parameter	Dry	Wet	Temperature Extremes	After Simulated Wear	Hot Water Immersion	UV Exposure	Laboratory Requirement		
							Min	Max	Units
Shock Absorption	X	X	X	X			57	68	%
Vertical Deformation	X	X	X	X			6	10	Mm
Rotational Resistance	X	X		X			32	43	Nm
Impact Attenuation (HIC)	X	X	X	X			1.3	-	m
Ball Roll (large ball)	X	X		X			-	12	m
Ball Roll (small ball)	X	X		X			5	-	m
Vertical Ball Rebound	X	X		X			0.6	1.0	m
Angled Ball Rebound	X	X		X			45	70	%
Skin/Surface Friction	X						0.3	0.75	
Skin Abrasion	X						-30	30	%
Tensile Strength – Yarn	X					X	30	.	N
Tensile Strength – Joints	X				X		2,500	.	N/100mm
Tensile Strength – Carpet	X						25	.	N/100mm
Tensile Strength – Shock pad	X						25	.	N/mm
Colour Change – Yarn	X					X	3	.	Grey Scale
Colour Change – Infill	X					X	3	.	Grey Scale
Water Permeability		X					500	.	mm/h

Performance Tests

WORLD RUGBY

Item B1.

Parameter	Laboratory ID Test	Field ID Test – On installation	Field ID Test – Subsequent testing
Carpet			
Mass per Unit Area	X	X	
Tufts per Unit Area	X	X	
Tuft Withdrawal Force	X	X	
Pile Height	X	X	X
Total Pile Weight	X	X	
Yarns (per yarn)			
Pile Yarn Characteristic (DSC)	X	X	
Pile Thickness	X	X	X
dTex	X	X	
Infills (per infill)			
Particle Size	X	X	X*
Particle Shape	X	X	X*
Bulk Density	X	X	
Thermogravimetric Analysis (TGA)	X#	X#	
Shock Pad			
Thickness	X	X	
Shock Absorption	X	X	
Vertical Deformation	X	X	

Performed on non-natural infills only
* Only required on performance infills

Identification Tests

WORLD RUGBY

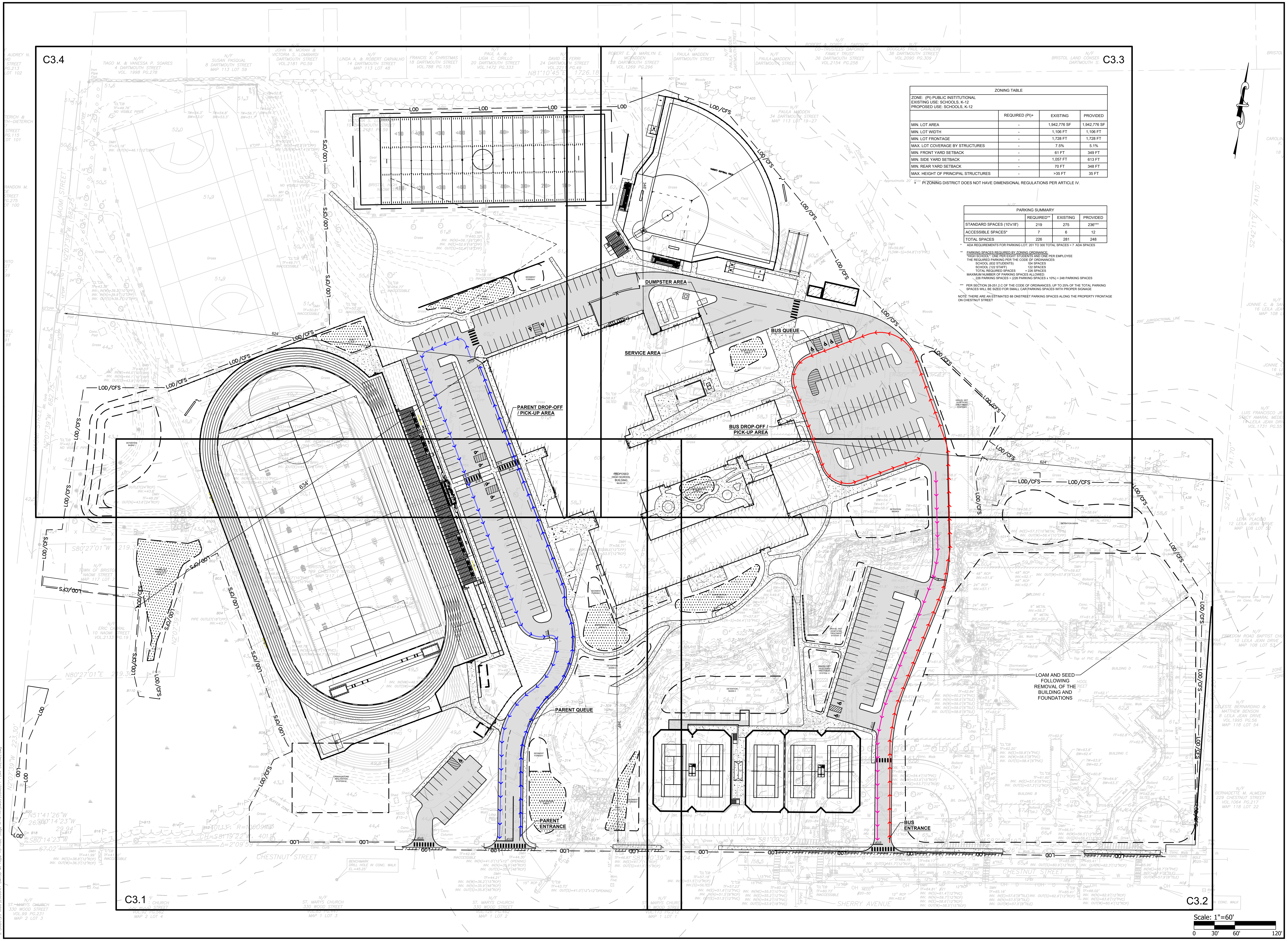
Item B1.

	FIFA	FIH	World Rugby
Certification process in place	X	X	X
Licensee process in place	X	X	X
Certification limited to licensees	X	X	
Accredited Test Institute Process	X	X	X
Lisport XL used for simulated wear	X		X
Lisport used for simulated wear		X	
Large Ball Roll Requirement	X		
Small Ball Roll Requirement		X	
Splash Rating Requirement	X		X
Heat Rating Requirement	X		X
Minimum Pile Height Requirement			X
HIC requirement			X
Energy Restitution Requirement			X

Sport Specific Requirements

WORLD RUGBY

Item B1.



ZONING TABLE			
ZONE: (PI) PUBLIC INSTITUTIONAL EXISTING USE: SCHOOLS, K-12 PROPOSED USE: SCHOOLS, K-12			
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PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

MT. HOPE HIGH SCHOOL
199 Chestnut Street
ASSESSOR'S PLAT 117, LOTS 3, 4, 5, 6, & 7
Bristol, Rhode Island

REVISIONS:

1	9-04-2024	MASTER PLAN REV
2	9-25-2024	MASTER PLAN REV

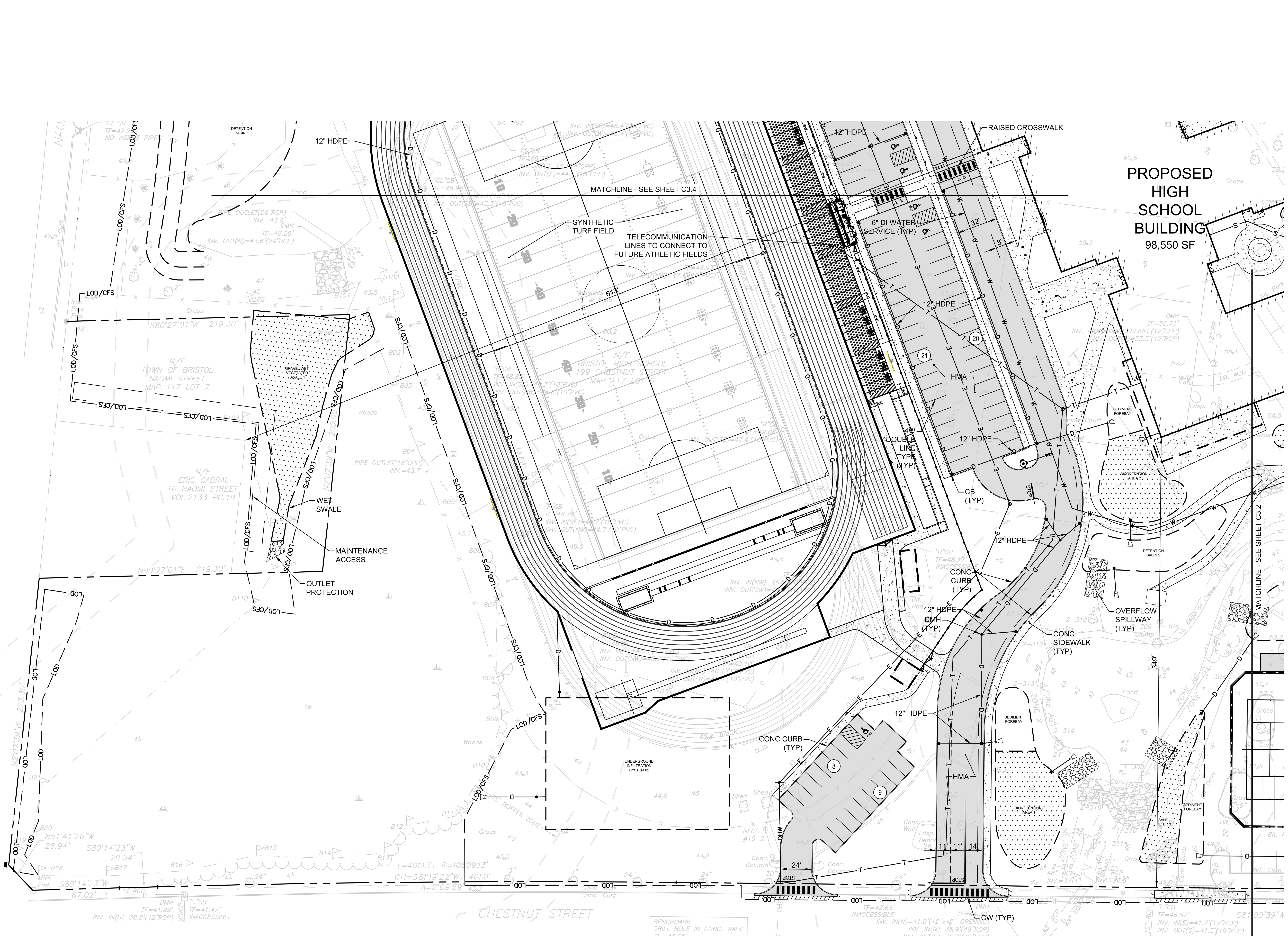
PROJECT NO.:	23099.01
DATE:	AUGUST 2, 2024
SCALE:	1"=60'
DESIGNED BY:	ACB
CHECKED BY:	
DRAWN BY:	AKL
APPROVED BY:	

DRAWING TITLE:
OVERALL CONCEPT PLAN

DRAWING NO.:
C3.0

SHEET NO. 5 OF 10

Item B1.



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Z:\JOBS\23 Jobs\23099.01 BWRSD Mt Hope HS-RIDE Stage III-IV-RI\DWGS\CONCEPT PLAN.dwg

PARE

OWNER/APPLICANT:
BRISTOL WARREN REGIONAL SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

SCALE ADJUSTMENT GUIDE
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REVISIONS:

1	9-04-2024	MASTER PLAN REV
2	9-25-2024	MASTER PLAN REV

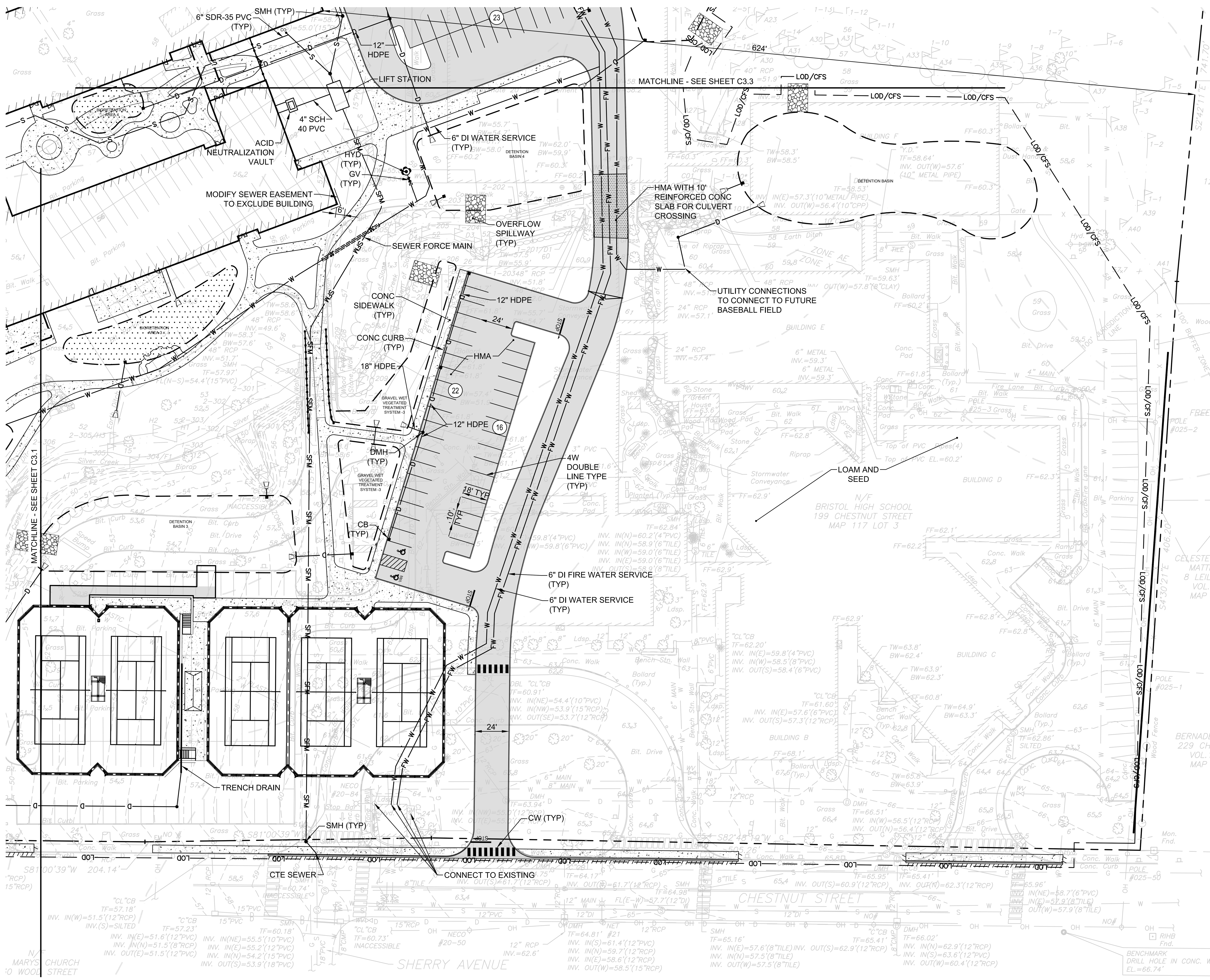
PROJECT NO.: 23099.01
DATE: AUGUST 2, 2024
SCALE: 1"=40'
DESIGNED BY: ACB
CHECKED BY:
DRAWN BY: AKL
APPROVED BY:
DRAWING TITLE:

CONCEPT PLAN 1.1

DRAWING NO.:
C3.1

SHEET NO. 6 OF 10

Item B1.



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235 HIGH STREET
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REVISIONS:

1	9-04-2024	MASTER PLAN REV
2	9-25-2024	MASTER PLAN REV

ZONING TABLE

ZONE: (PI) PUBLIC INSTITUTIONAL
EXISTING USE: SCHOOLS, K-12
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Scale: 1"=40'
0 20' 40' 80'

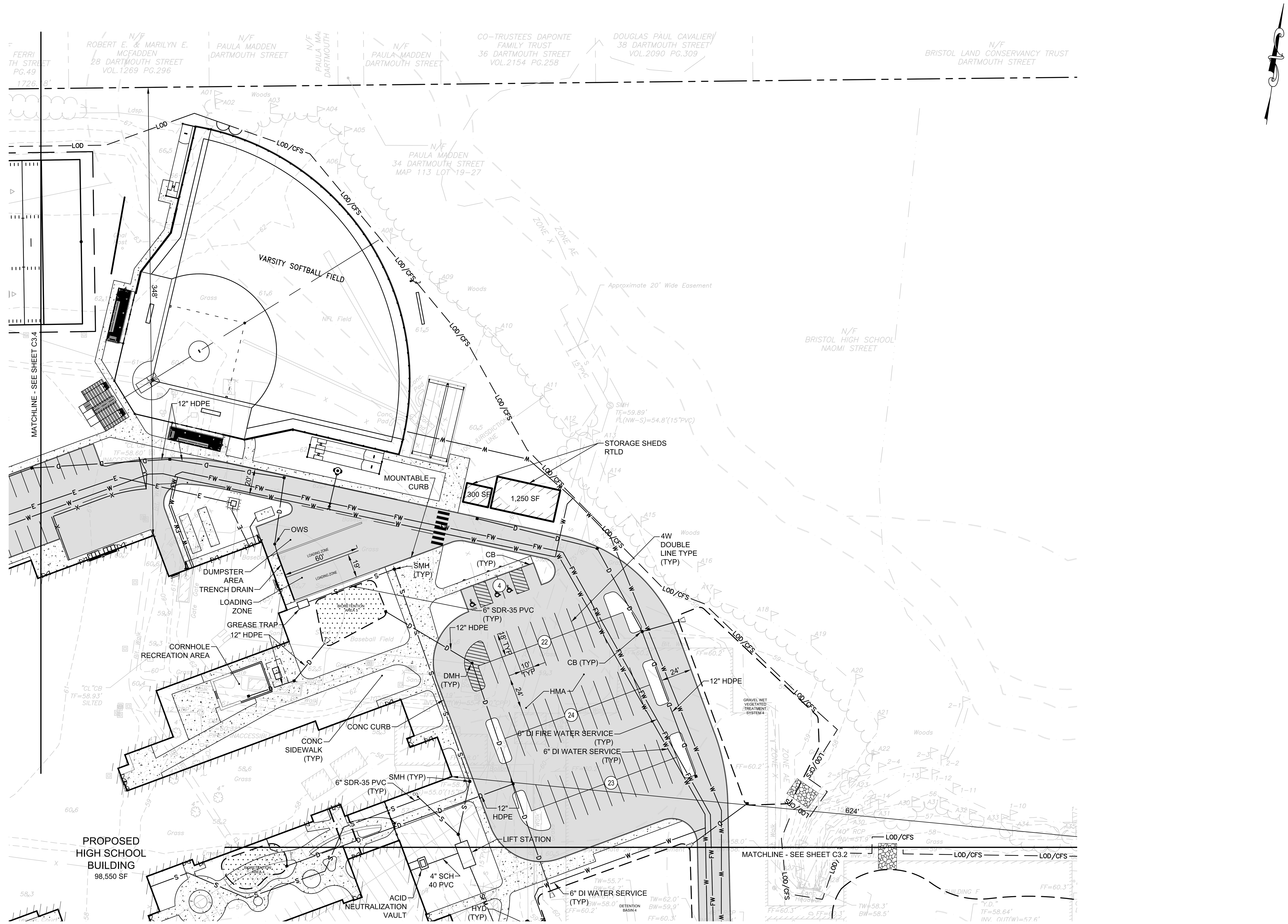
PROJECT NO.:	23099.01
DATE:	AUGUST 2, 2024
SCALE:	1"=40'
DESIGNED BY:	ACB
CHECKED BY:	
DRAWN BY:	AKL
APPROVED BY:	

DRAWING TITLE:
CONCEPT PLAN 1.2

DRAWING NO.:
C3.2

SHEET NO. 7 OF 10

Item B1.



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SCHOOL DISTRICT
235 HIGH STREET
BRISTOL, RI 02809
401-253-4000

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REVISIONS:

1	9-04-2024	MASTER PLAN REV
2	9-25-2024	MASTER PLAN REV

PROJECT NO.: 23099.01
DATE: AUGUST 2, 2024
SCALE: 1"=40'
DESIGNED BY: ACB
CHECKED BY:
DRAWN BY: AKL
APPROVED BY:
DRAWING TITLE:

CONCEPT PLAN 1.3

DRAWING NO.:
C3.3

SHEET NO. 8 OF 10

Item B1.

ZONING TABLE			
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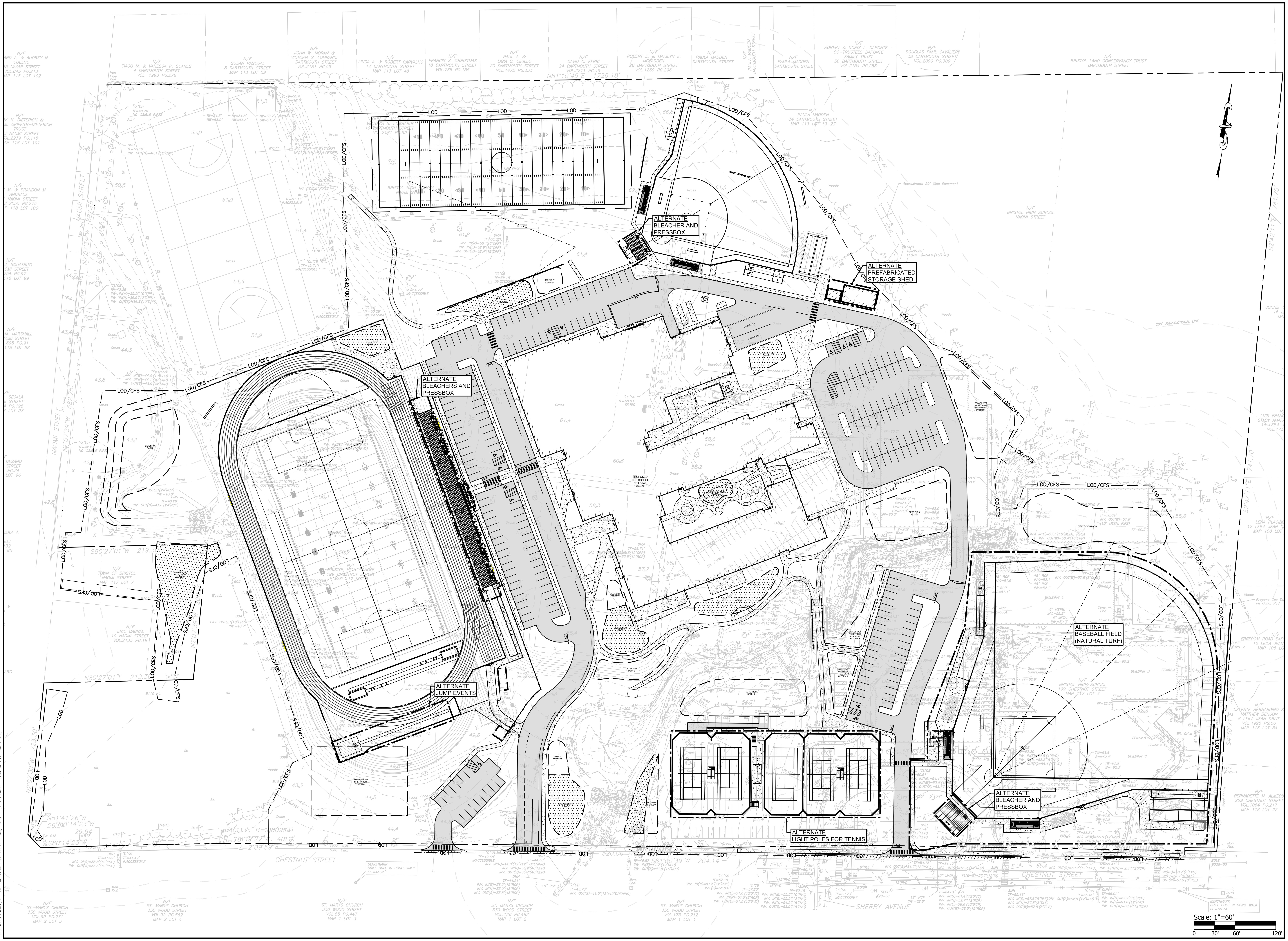
DESIGNED BY:	ACB
CHECKED BY:	
DRAWN BY:	AKL
APPROVED BY:	

DRAWING TITLE:
CONCEPT PLAN 1.4

DRAWING NO.:
C3.4

SHEET NO. 9 OF 10

Item B1.



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Bristol, Rhode Island

REVISIONS:

1	9-04-2024	MASTER PLAN REV
2	9-25-2024	MASTER PLAN REV

PROJECT NO.:	23099.01
DATE:	AUGUST 2, 2024
SCALE:	1"=60'
DESIGNED BY:	ACB
CHECKED BY:	
DRAWN BY:	AKL
APPROVED BY:	

DRAWING TITLE:

CONCEPT PLAN WITH ALTERNATES

DRAWING NO.:
C3.5

SHEET NO. 10 OF 10

September 27, 2024

Mr. Charles E. Millard, Jr.
Chair Bristol Planning Board
Town of Bristol Town Hall
10 Court Street
Bristol, RI 02809

RE: Master Plan Phase
Mt. Hope High School

Dear Mr. Millard and Members of the Bristol Planning Board:

This letter is written **in opposition to the granting** of Master Plan approval, and/or granting any waivers/deferrals in the application for the required RIDEM permits. The Master Plan – Supplemental Information provided by Pare Corporation, dated September 25, 2024, regarding Flood Plain, is both non-responsive and quite frankly, in my opinion, insulting to the neighbors' concerns with the existing flood problems.

The main concern is the flooding issue that is currently affecting our neighborhood, the high school, Chestnut Street, and adjacent areas of the Silver Creek watershed. The flooding problems are progressively getting worst and need to be addressed in a responsible and comprehensive manner. I believe the best way to address the flooding problem is to do the following:

Recommendations

1. Update the Silver Creek Drainage study using the latest version of the HEC RAS (Version 6.5 February, 2024) model and input the current increased rainfall amounts into the model.
2. Use the HEC RAS model to determine the impact of:
3. *existing (since 2007) and proposed new developments within the watershed.
   *the impact of filling in 40,000 square feet of wetlands upstream.
   *the impact of removing the old high school building. Could currently be acting as a dam blocking flood runoff to the high school property.
   *the decision to have the existing culverts remain.
   *the impact of sea level rise.
   the ability of the culvert(s) under St Mary's Cemetery to convey flood waters and their condition.

The Recommendations are based on the following Key Findings:

Key Findings From Master Plan---Supplemental Information

- **Using FEMA Map to Locate New High School is a Risk Not Worth Taking**

The supplemental information ignores the flood problems and bases its response on an outdated and erroneous FEMA map by citing Bristol Code of Ordinance Section 28-302

and Section 29-303. The Professional Consultants use the excuse that the FEMA map is the 'official' flood plain designation, and that the Beta study did not submit a 'Letter of Map Revision' to change the flood elevations.

The mere fact the FEMA map identifies: "Area of Minimal Flood Hazard" for Chestnut Street and the area in front of the high school shows that the map is not only outdated but inaccurate. This area is well known for flooding and traffic closures. Using *Rogers Free Library* digitized Bristol Phoenix, flooding and the closure of Chestnut Street was noted at least 14 times from 2001-2010. A police officer is quoted as saying per Bristol Phoenix "…and Chestnut Street saw flooding so bad that the police said a current running in the water was strong enough to sweep people off their feet." (Bristol Phoenix, October 20, 2005, page 12.)

It is our opinion that to locate a $200 (two hundred) million-dollar new high school based on a technicality that the FEMA map is correct, and Beta did not apply for a Letter of Map Revision is a risk not worth taking. This approach is beyond comprehension as it defies common sense and the overwhelming evidence of the flood problem affecting the high school area as well as all property within the Silver Creek Watershed.

- **BWRSD Informational Sessions and Design Team Outreach**

During these meetings we were told that our flooding concerns would be taken seriously; that there is a lot of oversight, including RIDEM permitting, to ensure flooding issues would be addressed. Furthermore, in an article written by Ethan Hartley for East Bay RI dated July 26, 2023, he asked the question of BWRSD: "if plans took into consideration rising sea levels and increased incidents of heavy rainfalls," the reply was: "This would be better answered by the professional on our design team. But I do know that planning for climate change has been top-of-mind,…"

- **Disconnect From What Was Assured.**

We are now at a point in realizing that the flooding problems within our neighborhood, as well as all property south of the Silver Creek Watershed to Silver Creek Bridge on Hope Street are not being properly addressed with the most accurate and recent data. It is our opinion that the Professional Consultants are not considering climate change by relying on a 2014 FEMA Map. Moreover, BWRSD is requesting waivers of State permits required for submission at the Preliminary Plan stage of review with the following permits to be provided as a condition of approval to be submitted prior to Final Plan Review. Such a waiver or deferral is contrary to what BWRSD assured; the argument that permits are provided as a condition of approval prior to Final Review is questionable and problematic.

- **RI Coastal Resources Management Council Questions Reliability of FEMA Maps**

The use of FEMA maps for flood plain designation has been determined to be unreliable by CRMC "These maps however are typically out of date and based on historical flooding and past development. They don't anticipate climate change trends, they often ignore rising sea levels, and they don't account for rapidly expanding development in flood prone suburban regions according to critics." The article continues to say that "Fugate (former Director CRMC) noted that FEMA maps are fundamentally inaccurate because of the geographical points they rely on called transits are two widely spaced". (eco' RI news; June 15, 2018). The Beta study had 23 sub watersheds and nearly 30 transits including Elbow Creek. Elbow Creek connects to Silver Creek in the high school area.

It is interesting to note that the FIS, in which the FEMA map is based on, did not consider the impact of sea levels. The FIS study said, "based on the results of the new coastal analysis, riverine backwater elevations have changed but are not incorporated into the new coastal study. The backwater elevations for East Branch Silver Creek, Walker Creek West Branch Creek will need to be updated in future revisions" (Flood Insurance Study, FEMA, 2013, p.12)

- **Acknowledge the Serious Flooding Problems and Perform a Responsible and Comprehensive Examination**

Let's not repeat the mistakes of the past. Flooding is serious and the impact of climate change worsens it. To disregard the flooding concerns is irresponsible. Therefore, it is critical that the most updated technical resources and tools are used.

It's worth noting that the BWRSC Professional Consultants conferred with U.S. Army Corps of Engineers regarding the special study of the Silver Creek Watershed. And they were told there is no preliminary data available. Moreover, the Professional Consultants concluded: "At this time, the Study does not include information that would supersede the FEMA Flooding Mapping depicted in the Master Plan." (Master Plan—Supplemental p. 3) Therefore, if there is no preliminary data available, how can the Professional Consultants conclude that the flood elevations would not change. The question then becomes how do the Professional Consultants plan on dealing with and when the revised FEMA study does show changes in flood elevations?

Summary of Key Findings From Master Plan-September 12

- **Flooding exists in our neighborhood, at the high school, at Chestnut Street, and adjacent areas of the Silver Creek watershed.** The problem of flooding was recently confirmed by the September 2nd, 2021 storm event that closed streets including Chestnut and flooded properly including Mount Hope high school. That storm event had a much smaller rainfall amount (essentially equal to a 25-year

storm event) than what would have occurred with a 100 -year storm event, in which the flood plain designation in elevations are based.

- **There is a proposed hotel development filling in 40,000 square feet of wetlands upstream of the new school site,** which potentially could increase flooding in the proposed location of the new high school. Potential increase in flooding from this proposed hotel development is a concern of the neighborhood, as expressed in a petition signed by over 100 residents. Also, many letters were written in opposition to DEM granting the permit without the hotel applicant performing the proper analysis of potential increase in downstream flooding. The Town Council also wrote a letter to DEM stressing the flooding concerns and included the Silver Creek drainage study to RIDEM quoting from there letter "that provides a comprehensive analysis of the area and highlights relevant factors." Additionally, the council stated there needs to be careful review because of the potential impact on construction of the new high school.
- **The use of an outdated flood map, which is included in the Master Plan Report.and the absence of the 2007 Silver Creek drainage study.** The flood plain (FEMA) identified in the Master Plan report is based on a FEMA flood insurance study dated February 21, 2013. The map National Flood Hazard Layer Firmette is based on the 2013 FIS that states "hydraulic analysis for the East Branch Ssilver Creek was obtained from the original FIS for the Town of Bristol (US Department of Urban and Housing Development 1971)"
- **The Town of Bristol commissioned Silver Creek Drainage Study,** Bristol RI (Beta Engineers-Scientists, November 2007). The Silver Creek Study utilized HEC RAS which is the proper method or the standard of practice for flood plain analysis. The analysis of the Silver Creek study showed potential increases in the flood elevations, including in the area of the high school campus.
- **Rainfall amounts have increased**. Changes have been made since the FEMA and Beta studies. The Rhode Island Stormwater Design and Installation Manual (RIDEM and CRMC, 2015) increased the rainfall amount associated with the 100-year Storm Event. Therefore, increased rainfall amounts will increase runoff that will have the potential to further increase flood elevation.
- **Storm events are occurring more frequently** and more significantly.
  In a newspaper article from the Providence Journal dated September the 7, 2022 It said "we're in a different time zone now' said Boving who studies hydrology. Historical design parameters can be thrown out of the window where in a new climate what was 100-year storm back then is more like a 25 or 10 year storm today". (Providence Journal, September 7, 2022, p.10A)
- **There is a rise in sea level** that restrict flow and causes backup again increasing flood areas and elevations.
- **Stormwater Management proposed by BWRSD is not addressing the serious flood problem**. The intent of stormwater management is to mitigate the increase

in stormwater flow rate, resulting from additional impervious areas to predevelopment rates. Generally, this is accomplished by detaining the stormwater and releasing it at a controlled rate similar to the predevelopment rate. One of the concerns with this approach is what RIDEM classified as "Coincidental peaks". "…it is possible that upstream peak discharge may arrive at the same time a downstream structure is releasing its peak discharge, thus increasing the total discharge" (*Rhode Islan Stormwater Design and Installation Manual,* RIDEM CRMC, 2015 p3-20). BWRSD and the Consultants must understand and take the existing flooding issue seriously and perform the proper analysis. Stormwater Management is not the proper examination for flood problems.

We understand the need to construct a new high school and we also understand the project schedule, but we feel it is necessary to do the proper examination. Let's not repeat the mistakes of the past by exacerbating an already flooding problem or by locating the high school in a flood prone area.

Therefore, we request that **the Planning Board does not approve the granting** of Master Plan approval, and/or granting any waivers/deferrals in the application for the required RIDEM permits.

Thank you for your attention to this request. I will be happy to answer any questions that you may have.

Sincerely:

Edward J Spinard

Edward J Spinard
35 Dartmouth Street

cc: Diane Williamson Director of Community Development

IMPROVING COMMUNITIES TOGETHER

MEMORANDUM

Date:	9/30/2024	Job No.:	23099.01
To:	Diane Williamson, AICP, CFM - Town of Bristol Director of Community Development; Edward Tanner – Town of Bristol Principal Planner		
Cc:			
From:	Nicole Iannuzzi, PE – Vice President (BETA Group, Inc.)		
Subject:	Mount Hope High School Master Plan Review TRC Meeting October 2, 2024		

This memo is to provide some clarification in regards to the stormwater requirements for the Mount Hope High School Project.

Stormwater Treatment:

- As this project is considered a "New Development Project" under the RIDEM Regulations, the design team is required to treat 100% of existing impervious area and 100% of proposed increase in impervious area.
- Water Quality Volume (WQV) Treatment Requirement is based on a 1.2" design storm.
- Design team will calculate required WQV based on impervious area and the 1.2" storm.

Stormwater Detention:

- RIDEM requires under Minimum Standard 5 – Overbank Flood Protection that downstream overbank flood protection must be provided by attenuating the post development peak discharge rate to the pre-development levels for the 10-year and 100-year, 24-hour Type III design storm events.
- The Town of Bristol's Subdivision and Development Review Regulations state: "The proposed drainage system shall be designed in accordance with RI Stormwater Manual Standards to accommodate stormwater such that 24 hour detention is provided for the one (1) year storm event, and post- construction conditions do not result in peak run-off increases in rate from pre-construction conditions for the ten (10), and one-hundred (100) year storm events."
- The Town of Bristol's Subdivision and Development Review Regulations also state that it is required within the Silver Creek Watershed that any increase in storm runoff volume, up to and including the 10-year storm event shall be retained and recharged on site as close as feasible to its place of origin.
- The Town of Bristol's Subdivision and Development Review Regulations also requires the design team to analyze the existing culverts within the project area to verify runoff entering and exiting will not be increased as a result of the project.

Planning Board Comments:

- Mr. Spinard stated his concerns that the existing available information is not based on current conditions/regulations. He suggested that the HEC-RAS model should be updated to include current development within the Silver Creek Watershed, updated rainfall amounts and sea level rise.
- The Silver Creek Watershed Study has been referenced. The Study was performed in 2007 and was performed to identify problem areas and identify potential drainage improvement projects to help mitigate flooding issues. The scope of the study did not include submitting a Letter of Map Revision to FEMA, nor was it meant to replace any FEMA information. The intent of the 2007 1-

Dimensional steady-state HECRAS model was to identify potential hydraulic restrictions along Silver Creek and not to redefine the floodplain limits. The cross sections of the model extend far enough to account for flooding around the school. However, the multidirectional flow that would occur around the school during a flooding event would not be accurately calculated using a 1-D HEC-RAS model. It is up to the design team to verify that removing the building above the culvert (the restriction within Silver Creek) does not result in negative downstream impacts. If necessary, this could be achieved by performing a new analysis using survey, updated LIDAR, current flow data, and the latest industry standard modeling practices.

- Rayona Clemons also commented about the Flood Insurance Rate Maps being updated and the impacts to Tanyard Brook. FEMA was contacted and stated that a FEMA FIRM update is not anticipated in the near future. This project is in the Silver Creek Watershed and not the Tanyard Brook Watershed.

Stormwater Regulations:

- The project design must meet the requirements of the regulations of RIDEM and the Town of Bristol. If the Town of Bristol (Planning Board) would like the project to meet additional more stringent stormwater requirements, then this should be discussed with the School Department.
- The design team shall supply necessary calculations and present designs which will meet the stormwater requirements of the Town of Bristol and RIDEM with the Preliminary Plan Submission.