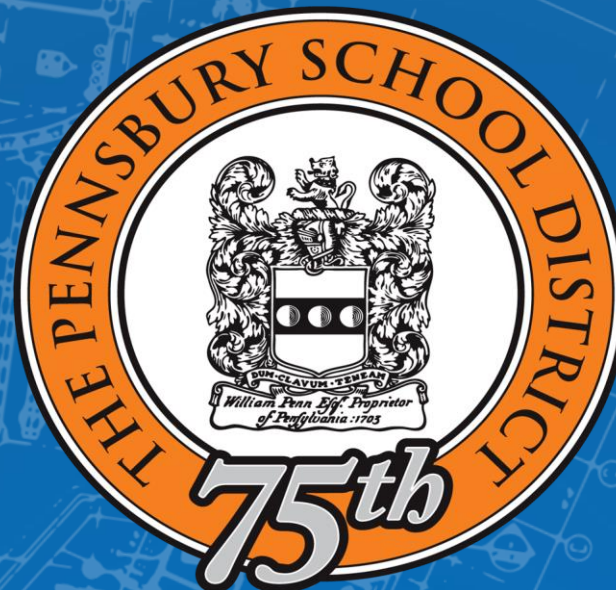


PENNSBURY SCHOOL DISTRICT HIGH SCHOOL UPDATE

School Board November 16, 2023



ANNIVERSARY
1948-2023



D'HUY Engineering, Inc.

High School Examination Timeline begins 2018



June 21, 2019

Building Utilization Study and Facility Assessment Progress Report – School Buildings



PENNSBURY
SCHOOL DISTRICT

June 21, 2019

BA BONNETT ASSOCIATES INCORPORATED
ARCHITECTS PLANNERS ENGINEERS PROGRAM MANAGERS

BONNETT ASSOCIATES INCORPORATED

TABLE OF CONTENTS

SECTION 1 INTRODUCTION & TIMELINE

SECTION 2 MAJOR PROJECTS CONSTRUCTION COST SUMMARY AND OPTIONS COMMENTARY

SECTION 3 EDUCATIONAL SPECIFICATIONS – HIGH SCHOOL

SECTION 4 EDUCATIONAL SPECIFICATIONS – MIDDLE SCHOOL

SECTION 5 EDUCATIONAL SPECIFICATIONS – ELEMENTARY SCHOOL

SECTION 6 STANDARD CLASSROOM REQUIREMENTS BASED UPON DEMOGRAPHIC DATA

SECTION 7 ELEMENTARY EDUCATIONAL SPECIFICATION SUMMARIES

SECTION 8 ROOM SCHEDULE DIAGRAMS

SECTION 9 FLOOR PLANS

SECTION 10 CONSTRUCTION COST ESTIMATES



D'HUY Engineering, Inc.

Bonnett Architects study 2019



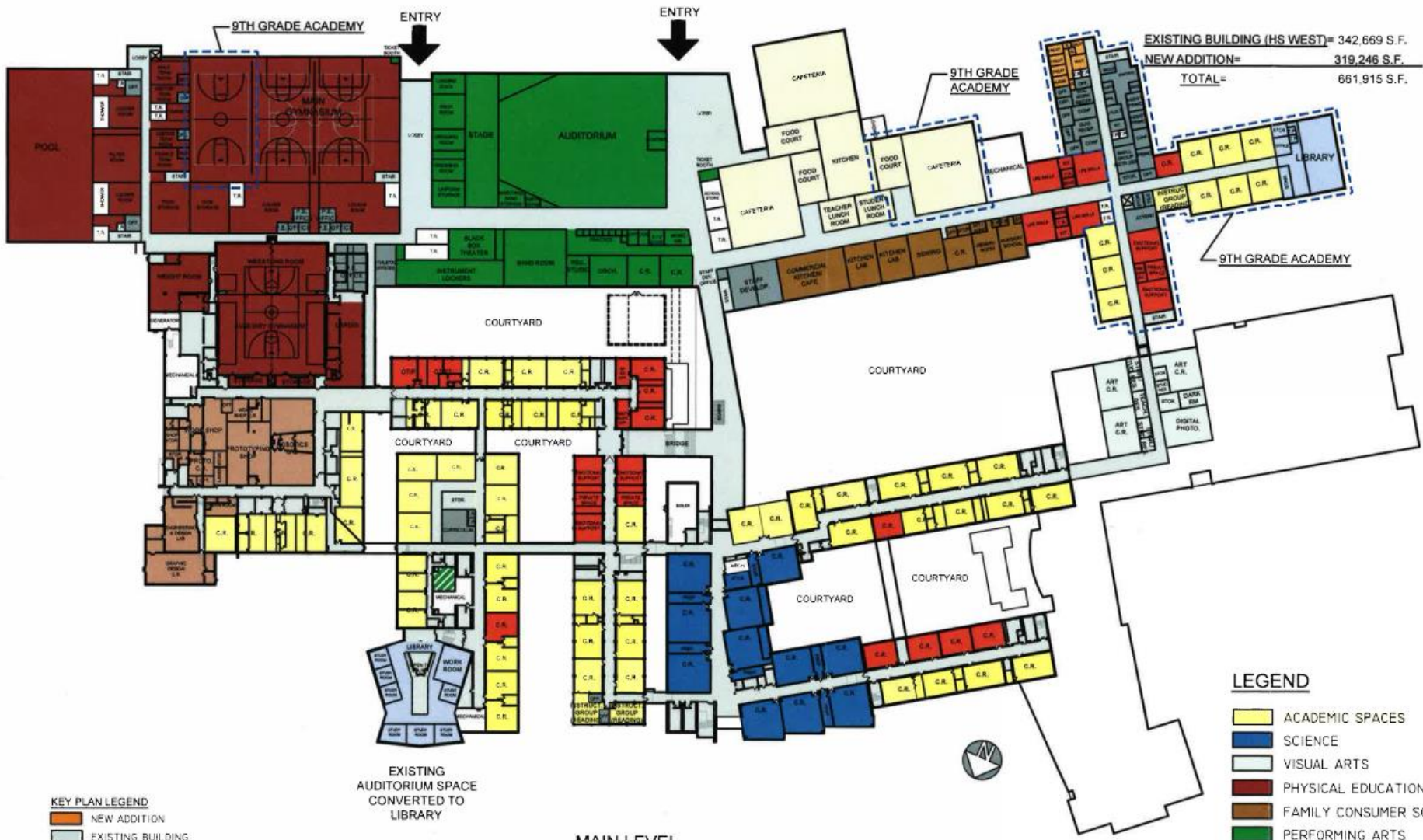
PENNSBURY SCHOOL DISTRICT BUILDING UTILIZATION STUDY & FACILITY ASSESSMENT MAJOR PROJECTS - ESTIMATED CONSTRUCTION COST SUMMARY

	Scope Description	Estimated Construction Cost	Option 1	Option 2	Option 3	Option 4
Pennsbury High School - Concept 1 - Two Buildings						
1	PHS West Educational Specification Related Additions - Except Natatorium	\$ 50,809,700	\$ 50,809,700	\$ 50,809,700	\$ 50,809,700	\$ 50,809,700
2	PHS West Educational Specification Related Alterations	\$ 14,757,100	\$ 14,757,100	\$ 14,757,100	\$ 14,757,100	\$ 14,757,100
3	PHS West Ed. Spec. Related Alterations - 3rd Auditorium & Old Gym	\$ 7,395,200		\$ 7,395,200	\$ 7,395,200	\$ 7,395,200
4	PHS West Common Areas Minor Renovations	\$ 4,904,500		\$ 4,904,500	n/a	n/a
5	PHS West Major Renovations (including Common Areas)	\$ 34,180,900		n/a	\$ 34,180,900	\$ 34,180,900
6	PHS West Natatorium Addition	\$ 7,820,000				\$ 7,820,000
7	PHS Campus - Site Work	\$ 4,894,700	\$ 4,894,700	\$ 4,894,700	\$ 4,894,700	\$ 4,894,700
8	PHS East Ed. Specification Related Alterations & Major Renovations	\$ 48,011,400	\$ 48,011,400	\$ 48,011,400	\$ 48,011,400	\$ 48,011,400
Total Estimated Construction Cost			\$ 118,472,900	\$ 130,772,600	\$ 160,049,000	\$ 167,869,000
5% Design / Construction Contingency			\$ 5,923,645	\$ 6,538,630	\$ 8,002,450	\$ 8,393,450
Total Estimated Construction Cost			\$ 124,396,545	\$ 137,311,230	\$ 168,051,450	\$ 176,262,450
Pennsbury High School - Concept 2 - Single Building						
9	PHS West Educational Specification Related Additions - Except Natatorium	\$ 86,193,200	\$ 86,193,200	\$ 86,193,200	\$ 86,193,200	\$ 86,193,200
10	PHS West Educational Specification Related Alterations	\$ 14,757,100	\$ 14,757,100	\$ 14,757,100	\$ 1,475,700	\$ 14,757,100
11	PHS West Ed. Spec. Related Alterations - 3rd Auditorium & Old Gym	\$ 7,395,200		\$ 7,395,200	\$ 7,395,200	\$ 7,395,200
12	PHS West Common Areas Minor Renovations	\$ 4,904,500		\$ 4,904,500	n/a	n/a
13	PHS West Major Renovations (including Common Areas)	\$ 34,180,900		n/a	\$ 34,180,900	\$ 34,180,900
14	PHS West Natatorium Addition	\$ 7,820,000				\$ 7,820,000
15	PHS Campus - Site Work	\$ 8,071,100	\$ 8,071,100	\$ 8,071,100	\$ 8,071,100	\$ 8,071,100
Total Estimated Construction Cost			\$ 109,021,400	\$ 121,321,100	\$ 137,316,100	\$ 158,417,500
5% Design / Construction Contingency			\$ 5,451,070	\$ 6,066,055	\$ 6,865,805	\$ 7,920,875
Total Estimated Construction Cost			\$ 114,472,470	\$ 127,387,155	\$ 144,181,905	\$ 166,338,375

Note: Estimated Construction Costs provided do not include architectural, engineering or construction management services or soft costs such as project financing, permitting, asbestos abatement, etc.

- 4 campus options were reviewed
- The 2019 Bonnett study suggested that a 100% renovated WEST HS would approach \$200M
- Soft costs were not included in these figures
- Other District projects in the Capital Plan were deemed to be the priority





EXISTING BUILDING (HS WEST)=	342,669 S.F.
NEW ADDITION=	319,246 S.F.
TOTAL=	661,915 S.F.

KEY PLAN LEGEND
 NEW ADDITION
 EXISTING BUILDING



KEY PLAN
NOT TO SCALE

EXISTING AUDITORIUM SPACE CONVERTED TO LIBRARY

MAIN LEVEL

- LEGEND**
- ACADEMIC SPACES
 - SCIENCE
 - VISUAL ARTS
 - PHYSICAL EDUCATION
 - FAMILY CONSUMER SCIENCE
 - PERFORMING ARTS
 - TECHNICAL EDUCATION
 - SPECIAL EDUCATION
 - HEALTH SUITE
 - LIBRARY
 - ADMINISTRATION SPACES
 - CAFETERIA
 - TWILIGHT/ALTERNATIVE
 - MISCELLANEOUS
 - CIRCULATION

WEST - PRELIMINARY FLOOR PLAN
 CONCEPT 2
 FACILITY SPACE PROGRAM
PENNSBURRY HIGH SCHOOL
 PENNSBURRY SCHOOL DISTRICT



JUNE 21, 2019

BA BONNETT ASSOCIATES INCORPORATED
 ARCHITECTS • PLANNERS • ENGINEERS • INTERIORS • PROJECT MANAGERS
 200 BALTIMORE STREET, SUITE 200 • HARTFORD, CONNECTICUT 06103



High School Educational Specifications 2019



Educational Specifications as of February, 2019



SCIENCE

Size

- 25 total rooms (not included in general classroom count)
- 28 students per class for all rooms.
- 1200 sq. ft. per Classroom

Special Considerations

- Science classrooms grouped by subject within the academic wing
- Common storage room per content - 4 rooms
- Bio-Med Computer Lab as one of the classrooms

Layout

- Integrated classroom and labs
- Teacher presentation station in the front of the room
- Water, sink, electricity at the teacher station. Gas for Bio/Chem.
- Space for student desks
- A minimum of two science labs connected with prep/storage space [If new school construction or possible in existing.]

Technology

- Interactive TV
- Multiple electrical outlets
- Wireless network in all labs.

Cabinets/Casework

- Secure storage along the sides of the room
- Floor to ceiling secure storage incorporating drawers and shelving on one wall
- Cabinetry along the one side wall will be top(cabinets) and bottom(drawers) with counter space in between
- Sink and water

Furnishings/Appliances

- Bulletin Board
- Additional whiteboards along front wall
- Eye wash stations and all necessary safety equipment
- Chemical storage

GENERAL ROOMS (Math, Social Studies, English, World Language, ELL, BCIT, Gifted)

Size

Rooms should be no less than 850 square feet, square or rectangular in shape and set up for flexibility so the teacher can configure the room to the circumstances.

There are 99 standard rooms.

Special Considerations

Separate general storage space located by department offices.

Layout

- Teacher Desk
- Student Desks (30)
- Whiteboards
- Cabinetry and counter space around perimeter of room.

Technology

- Interactive TV
- Computer – Wireless network accessible from all classrooms.

Cabinets/Casework

- Open shelving (books, dictionary, etc)
- Secure storage standard supplies - closet and cabinetry

Furnishings/Appliances

- Whiteboards on opposite walls
- Bulletin boards
- Teacher desk / Technology Station that accommodates the computer/laptop
- Student desk - flat top to allow for laptop use / group work, separate chairs, open storage under the desk

MATH

2 intervention rooms (not included in the general count)
Smaller spaces for instructional groups.

READING

3 office spaces
3 smaller spaces for instructional groups

- Established room size, student count, room attributes and special considerations



2021 KCBA Architects Planning

West HS 351,276 SF
 Auditorium (Cave) seating – 620
 Keller Hall - 580
 Gym seating - 100 (one bleacher)

East HS 208,729 SF
 Auditorium seating – 910
 Gym seating – 1272

Natatorium 15,000 SF
 MOST (modulars) 3,600 SF

Existing 578,005 SF

Suggested HS Program For 3000 students
 505,487 SF

PENNSBURY SCHOOL DISTRICT		Requested based on every teacher has a room	
PENNSBURY HIGH SCHOOL		July 2021	
PROPOSED ACADEMIC PROGRAM		No.	NSF
			Total
INSTRUCTIONAL PLANNING CENTERS			
Department Offices			
9th Grade Departments	4	300	1,200
English Department	1	500	500
Math Department	1	500	500
Social Studies Department	1	500	500
World Language Department	1	500	500
Mixed Department	2	500	1,000
Subtotal	13		4,200
ADMINISTRATIVE CENTER			
Health Office			
Nurse Suite	2	1,920	3,840
Subtotal	2		3,840
Administration Offices			
Main Office	1	3,000	3,000
Guidance Suite	1	2,000	2,000
9th Grade Administration	1	1,800	1,800
Assistant Principal Office Suites	7	400	2,800
Security Office	1	250	250
Faculty Dining	2	750	1,500
Small Conference Room	2	250	500
Larger Conference Room	2	500	1,000
IT technician			
Subtotal	17		12,850
ADMIN. CENTER TOTAL			16,690
ACADEMIC TOTAL			240,366
COMMONS TOTAL			45,100
INSTRUCTIONAL PLANNING			4,200
ADMINISTRATION TOTAL			16,690
BUILDING NET TOTAL			306,356
BUILDING GROSS TOTAL			505,487
GROSSING FACTOR			1.65
SQUARE FEET PER STUDENT			180.53

2021 KCBA Renovation Plan (3000 students)

COMMUNITY ADDITION
(GYM/AUDITORIUM)

RENO

RENO

9TH GRADE CENTER ADDITION

RENO

Deficiencies throughout the building warranted a more comprehensive renovation



Materials removal prior to demo/reno

Campus Total (Per E2 Report)
 \$857,000 East
 \$624,100 West
 \$201,750 Village Park
 \$43,600 Natatorium
\$1,726,450 + escalation

Budget for \$2M + escalation

Table 2 - Summary of Findings and Estimated Removal Costs - High School East

Location	Material Description	Estimated Quantity	Estimated Cost
Throughout Addition	1' x 1' Floor Tile and Mastic (Black)	6,640 S.F.	\$46,500.00
Throughout 1955 (Original) Building	9" x 9" Floor Tile and non-Mastic (Black) - Some Under carpet	63,320 S.F.	\$380,000.00
Electrical Room, Gym/Locker Rooms	Spray-on Fireproofing	5,315 S.F.	\$107,000.00
Boiler Room/Incinerator Room	Spray-on Fireproofing (Above Plaster Ceiling)	2,750 S.F.	\$82,500.00
First Floor Science Rooms (Addition)	Science Lab Tabletops/Sinks (Black)	605 S.F.	\$3,000.00
First Floor Science Rooms (1955)*	Science Lab Tabletops (Black)*	To Be Determined*	\$3,000.00
Throughout 1955 (Original) Building**	Thermal Pipe/Hangar Insulation (Above Drop Ceilings - 2 Lines)**	1,425 L.F. (so far)**	\$57,000.00
Throughout Building (Original/Addition)	Chalkboard/Tack-Board Adhesive (Brown/Black)	Not Quantified	\$42,000.00
Gymnasium	Felt Vapor Barrier under Wood Floors (assumed ACM)***	12,250 S.F.	\$122,500.00
Auditorium Stage	Stage Light Wiring (assumed ACM)	240 L.F.	\$1,500.00
TOTAL - Asbestos Abatement (Includes identified and assumed ACM)			\$845,000.00
Throughout Building	Light Tubes (Assumed Mercury-Containing)	5,400 Tubes	\$5,400.00
Throughout Building	Light Ballasts (No PCB's)	2,300 Ballasts	\$4,600.00
Throughout Building	Misc. Devices (Thermometers, Thermostats, Gauges, etc.)	Not Quantified	\$2,000.00
TOTAL - Hazardous Materials (Recycling fees only, does not include labor for removal or transportation fees)			\$12,000.00

*Further investigation is required due to inconsistent analysis results in 1955 Building (2 samples - brown/black non-ACM, 1 sample - black ACM)

**Further investigation is required once original piping drawings are available, to confirm locations and quantities of the 2 ACM-insulated lines

***Assumed ACM until core sampling of the wood floor is feasible and the assumed ACM under wood floors is accessible for sampling





2022-'23 Updated Building Plan (2800 students)

PENNSBURY SCHOOL DISTRICT									
PENNSBURY HIGH SCHOOL									
PROPOSED ACADEMIC PROGRAM	Requested based on every teacher has a room			Proposed to match Capacity			Student Capacity calculation		
	No.	NSF	Total	No.	NSF	Total	No.	Per Room	Total
INSTRUCTIONAL PLANNING CENTERS									
Department Offices									
9th Grade Departments	4	300	1,200	2	450	900			
English Department	1	500	500	2	450	900			
Math Department	1	500	500	2	450	900			
Social Studies Department	1	500	500	2	450	900			
World Language Department	1	500	500	2	450	900			
Mixed Department	2	500	1,000	2	450	900			
Subtotal	13		4,200	13		5,400			
ADMINISTRATIVE CENTER									
Health Office									
Nurse Suite	2	1,920	3,840	1	2,000	2,000			
Subtotal	2		3,840			2,000			
Administration Offices									
Main Office	1	3,000	3,000	1	4,000	4,000			
Guidance Suite	1	2,000	2,000	1	1,680	1,680			
9th Grade Administration	1	1,800	1,800			-			
Assistant Principal Office Suites	7	400	2,800	7	250	1,750			
Security Office	1	250	250	1	200	200			
Faculty Dining	2	750	1,500	2	700	1,400			
Small Conference Room	2	250	500	3	250	750			
Larger Conference Room	2	500	1,000	1	375	375			
IT technician				4	450	1,800			
Subtotal	17		12,850			11,955			
ADMIN. CENTER TOTAL			16,690			13,955			
ACADEMIC TOTAL			240,366			226,214			
COMMONS TOTAL			45,100			42,700			
INSTRUCTIONAL PLANNING			4,200			5,400			
ADMINISTRATION TOTAL			16,690			13,955			
BUILDING NET TOTAL			306,356			288,269			
BUILDING GROSS TOTAL			505,487			475,644			
GROSSING FACTOR			1.65			1.65			
SQUARE FEET PER STUDENT			180.53			169.87			2,800

505,000 SF reduced to 475,674

including:

(Final spaces/sizes TBD)

- 9-12 education spaces
- 19,000 SF/1000 seat Auditorium
- MOST, JROTC, Pre-K Learning Lab
- Right sized classrooms for 28 seats
- Gymnasium to seat 3000
- 8 Lane Pool (if existing is not saved)
- Cafes (2) for 3000 with one kitchen
- Right sized Admin with Nurse
- Support spaces



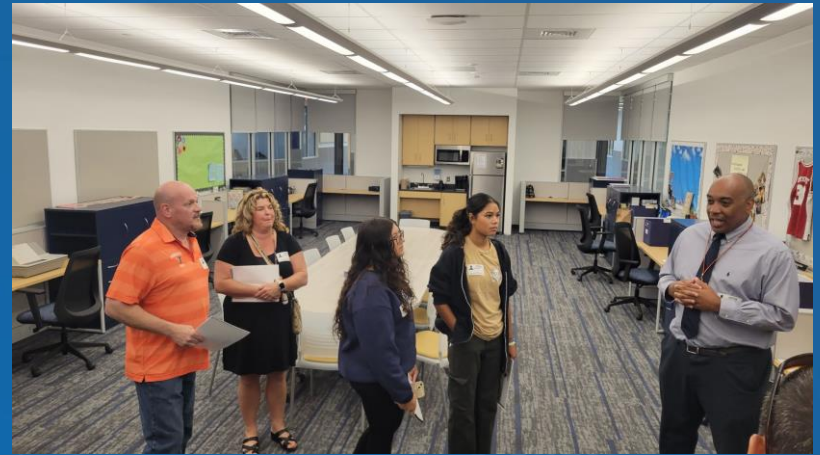
Community Committee



- Comprised of students, educators, construction industry representatives and community members
- Toured the campus buildings with District staff and discussed deficiencies
- Toured the 2 most recent new high schools in eastern PA and identified desired 21st century learning components
- Discussed the educational, site/operational and phasing advantages/disadvantages of renovation versus new
- Made Suggestion to Facilities & Finance Committees that new construction would provide the greatest long-term value for the District



HS Building Tours



What does this mean for full renovation?



Program – 475,644 to 505,487

West HS – 351,276 SF

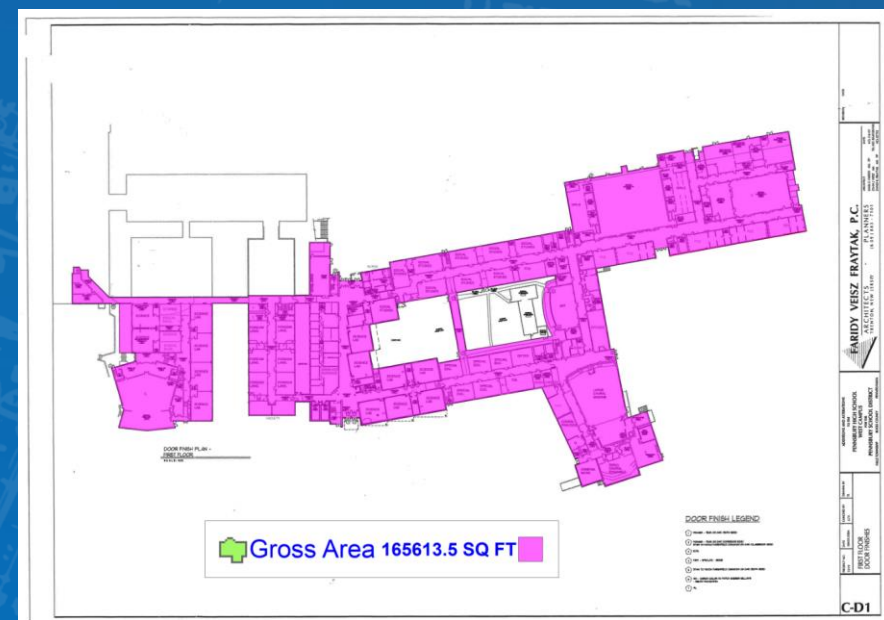
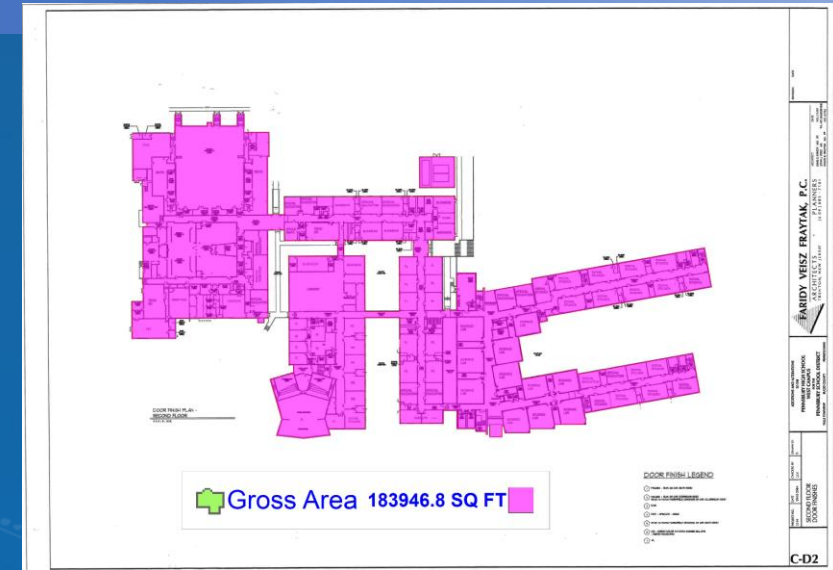
Additions – 124,368 to 154,211

But...

- Pool would be new (15,000)
- Gym would be new (27,000)
- Auditorium would be new (23,200)

Additions – 189,568 to 219,411 SF

Part of an Architect's role will be to work with the plan to "right size" this program with you.



SF Comparison of new versus renovation



New Building

475,000 to 505,000 SF

Renovation/Additions to West

Additions – 189,568 to 219,411 SF

Demolition – 22,630 (minimum)

Renovation – up to 328,646

(There will be both “heavy and light” reno)

518,214 to 548,057 SF



Heat Map Comparison: Renovation v. New

Category E : Educational impact

	Solution
O	Optimal
C	Compromise
NA	Not Addressed

Category	Scope items	Renovate existing Building with Additions	Solution	New High School	Solution
E	Building Security	Restrictions on security systems in existing building layout	C	Public areas will be separated from educational spaces so that the main portion of the building can be secured when not in use.	O
E	"The Walk"	Will be eliminated.	O	Will be eliminated. Consider tradition of the "walk".	O
E	Building layout	Will remain inefficient and sprawling.	na	New layout will be efficient and compact.	O
E	Room size	West room size (original section was a middle school) cannot be enlarged. Teaching spaces in the existing building will be utilized but are undersized per current planning guidelines.	na	New teaching spaces will be sized appropriately.	O
E	21st Century Learning Spaces	Difficult to provide in renovation. Lockers in halls make daylighting difficult.	C	Spaces like those visited at Avon Grove and Upper Merion are possible.	O
E	Special Education	Limited spaces at West. Renovation will be unsettling.	C	All will move into the new building when complete. Design of spaces can be performed to provide all where needed.	O
E	Small/Large Group Learning Spaces	Few existing at West.	C	New Spaces can be designed and located to support needs.	O
E	ADA Accessibility	There will be challenges with West with ramps, the Cave, doorways, stairs and exterior access.	C	Will be compliant.	O
E	Interior building circulation	There are inefficiencies with the existing building layout.	C	The layout of the building will be efficient to minimize circulation through the building. Accessibility will be a component of the circulation.	O

Department of Education Act 34 Check



- The PA Department of Education (PDE) provides guidelines for building capacity
- ACT 34 of 1973 establishes limitations on building cost (aka, the “Taj Mahal Rule”)
- Prior to bidding of project, public school Districts are required to conduct an Act 34 Hearing to demonstrate compliance
- Regardless of renovation or new construction, the ranges of building size (475,000 to 505,000) and building cost (site, renovation and soft costs do not apply) have been confirmed to be below the maximum expenditures established by PDE



Budget comparison new versus renovation



Renovate West (351,276 SF + partial demo) and
Build Addition (189,000 – 220,000 SF) **Total SF 515,000-550,000**

- Renovate Existing West High School Range: \$ 265- \$290/ SF
How much renovation is performed? It cannot be every SF.
- Building Addition Range: \$ 375- \$410/SF
Pool (if included) and Cave Auditorium scope need to be determined
- Abate & Demolish East High School/VP Range: \$ 2M - \$4M
- Site Improvements Range: \$ 15M- \$20M
- Soft Cost, Contingency Range: \$ 40M- \$60M

Total Cost \$185M - \$240M

Depends upon the “intensity” of the renovation



Budget comparison new versus renovation



New 9-12 High School Total 475,000 – 505,000 SF

- New Construction Range: \$ 375-\$410/SF
Pool (if included), Auditorium & Trans scope need to be reviewed
 - Abate & Demolish East & West High School Range: \$ 4M - \$5.5M
Determine Village Park scope
 - Site Improvements Range: \$ 25M- \$30M
 - Soft Cost & Contingency Range: \$ 28M- \$33M
\$235M- \$275M
- Desire to target a program/cost for less than \$250M

Escalation to be determined when project scope and timelines are final





Option 3B | New High School – Existing Site

Redefine • Redesign • Reimagine

Building Construction Options

I. Construct a **new 3,000 Student High School on the existing High School Site**. The existing Stadium and Maintenance Facility would remain. A Three-Court Gymnasium with 3,000 seats and an 850 seat Auditorium are programmed with this option.

II. Proposed New Room Schedule
287,700 sq ft (refer to attached room schedule)

Total Architectural Area
(287,700 sq. ft. x 1.74)

500,000 sq. ft.

III. Summary of New Construction Costs

Site Development	\$ 12,000,000
New Construction (500,000 sq. ft. x \$400)	\$ 200,000,000

Sub-Total \$212,000,000

Architectural/Engineering Fees	\$ 9,540,000
Construction Manager Services	\$ 3,500,000
Land Development Engineering Fees	\$ 800,000
Furniture and Equipment	\$ 3,600,000

Sub-Total \$17,440,000

IV. Additional Construction Related Costs

Permits and Reviews; Agency Reviews and Approvals; Geotechnical, Environmental and Construction Testing; etc.)	\$800,000
Demolition of Existing Structures and Features	\$ 4,000,000
Contingency (5% of Construction Cost)	\$ 10,600,000

Sub-Total \$15,400,000

Financing Costs (estimated)

Sub-Total \$4,800,000

V. Estimated Project Cost

\$249,640,000



How the architect selection process work



D'HUY Engineering, Inc.

- A Request for Proposal (RFP) has been drafted to seek architects with a successful track record of Pennsylvania public school design experience.
- The site survey, programming information and reports about the site have been included for information.
- A pre-proposal meeting will be held to allow the respondents to examine the buildings and site.
- On the basis of the data provided and their experience, the architects and their engineering teams will be asked to assemble concept drawings of the proposed project together with their credentials, references and fees.
- The District will examine the concepts and architects and create a shortlist prior to examining the fees.
- The Board and Administration will interview the architects, ask questions and make a selection on the basis of selection criteria.
- The solicitor has reviewed a design agreement that will be the basis for the submissions by all of the teams for consistency.

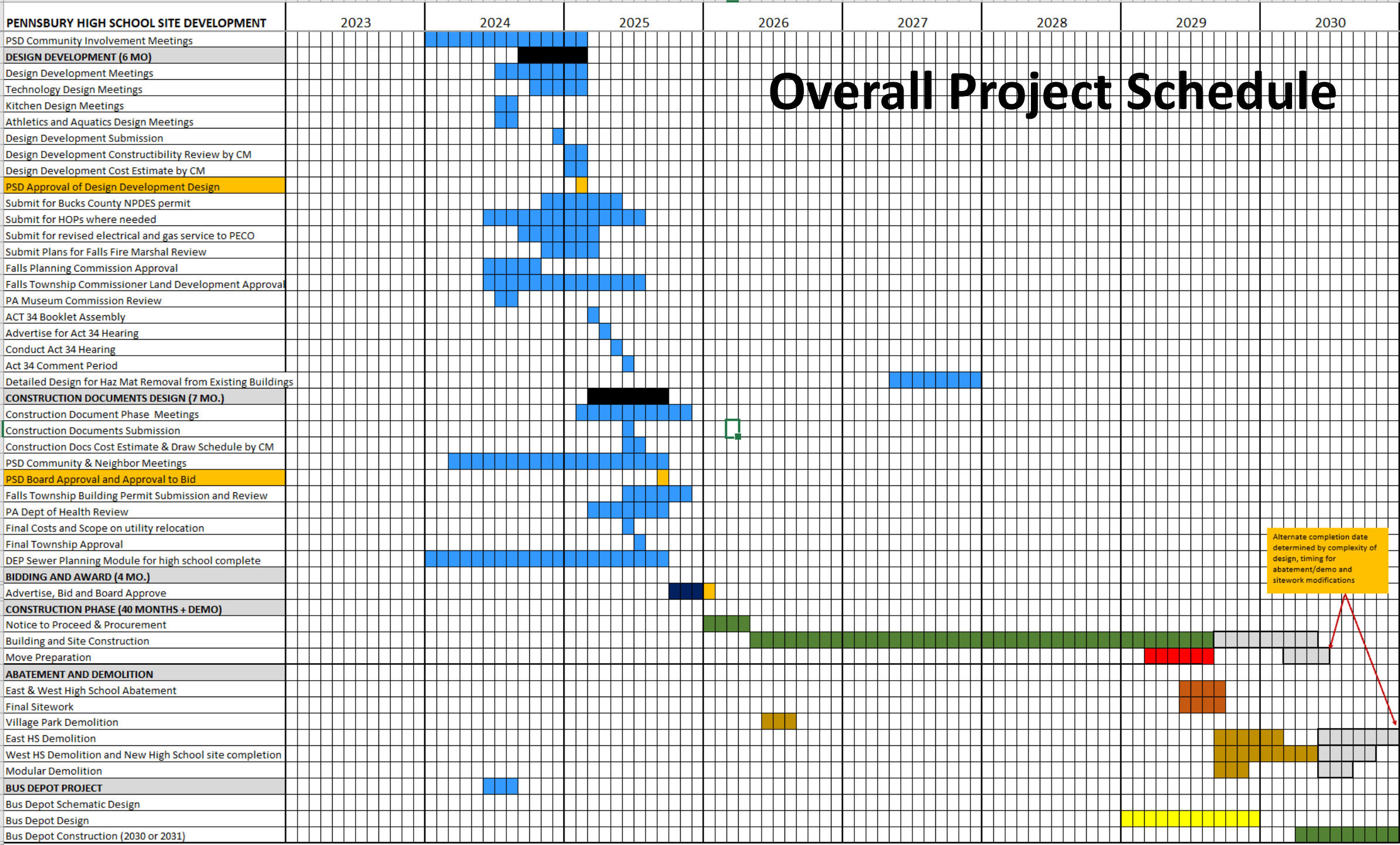
Architect Selection Schedule



PENNSBURY HIGH SCHOOL SITE DEVELOPMENT	2023												2024											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
PROJECT PLANNING AND DEVELOPMENT																								
Preliminary Budget & Financing Plan	█	█	█	█	█																			
Preliminary Geotechnical Investigation						█	█	█																
Site Boundary and Topographic Survey						█	█	█																
Existing Building Hazardous Materials Investigation						█	█	█																
Ground Penetrating Radar Utility Location								█																
Board Meeting to Authorize Issuance of Architect RFP																								
PROJECT DESIGNER SELECTION																								
Assembly of Architectural/Civil/MEP Design RFP & Contract																								
Architect RFP Issuance, Interviews and Board Selection																								
Pre-proposal meeting and site visits																								
Architect RFP Due																								
Community Meeting to review concept																								
PSD Architect Interviews																								
Facilities Meeting to review Architect																								
Board Meeting to Select Architect																								
SCHEMATIC DESIGN PHASE (5 MO)																								
Design Meetings																								
End User Meetings by Architect																								
Schematic Design Submission																								
Schematic Design Value Engineering by CM																								
Schematic Design Cost Estimate by CM																								
PSD Facilities and Board Review																								

11/16/23
 11/17-21/23
 11/28/23
 1/31/24
 2/6/24
 2/6-28/24
 3/7/24
 3/21/24





Alternate completion date determined by complexity of design, timing for abatement/demo and sitework modifications



Thank you!



Heat Map Comparison: Renovation v. New

Category E : Educational impact

	Solution
O	Optimal
C	Compromise
NA	Not Addressed

Category	Scope items	Renovate existing Building with Additions	Solution	New High School	Solution
E	Music Program	Keller Hall is a beautiful space and should remain. Not large enough for productions. Challenges in building music program and a new auditorium near Keller.	O	New Auditorium can be made efficient and be properly surrounded by Arts and Music Spaces.	O
E	Theatrical Program	The Cave is not accessible, has inadequate seating and is not surrounded by set design, storage or music spaces	C	New Auditorium design to accommodate capacity and program	O
E	Media Center	The existing Library/Media Center will be expanded to meet curricular needs.	O	The Library will have an efficient design that meets the curricular needs.	O
E	Administration, Guidance, & Nurse	Existing Admin space will not accommodate additional administrators. Nurse's Suite is not connected and does not have secure access for parents.	C	Locate offices where appropriate, provide transparency	O
E	Proximity of multi-use spaces	Library, Cafeteria, and Gymnasium are located at different corners of the building footprint. Not centrally located.	na	The building design will provide for a central entrance/administrative area with the educational spaces to one side and the public areas to the other.	O
E	Courtyard Egress	Many exterior doors at West	na	Provides new opportunities for outdoor learning opportunities.	O
E	Future expansion	Due to the sprawling nature of the existing building, there are limited options for building additions in the future.	na	New layout will account for possible future additions.	O

Heat Map Comparison: Renovation v. New

Category I : Stakeholder, user and infrastructure impact

Solution

O Optimal

C Compromise

NA Not Addressed

Category	Scope items	Renovate existing Building with Additions	Solution	New High School	Solution
I	Sprinklers	Sprinklers will be served from the public water service.	O	Sprinklers will be served from the public water service.	O
I	Electrical Systems	Aging and in need of replacement and expansion at West.	C	Designed to meet current code and life safety requirements	O
I	Gymnasium	West Gym has no spectator seating and will need to be enlarged.	O	New gym can be built to accommodate spectators and all athletic needs.	O
I	Natorium	Build new pool in the renovation	O	Connect natatorium and team rooms makes for better security, energy efficiency and access.	O
I	Storage	Storage space throughout the existing building will be addressed, but due to the configuration, will be limited.	C	Storage requirements will be addressed efficiently throughout the building for all spaces (i.e. Kitchen, Gymnasium, Teacher needs, facility needs, etc.)	O
I	Athletic Fields	Existing will remain.	C	There will be a time during which there will be a shortage of fields during construction. Include a second synthetic field as part of project?	C
I	Exterior walls	Exterior wall insulation will remain as is. All windows will be replaced. EIFS in many parts of West.	C	Entire building envelope will be energy efficient.	O
I	Existing utility tunnels	No tunnels but underground sanitary at West has a history of problems.	O		O

Heat Map Comparison: Renovation v. New

Category I : Stakeholder, life cycle and infrastructure impact

Solution	
O	Optimal
C	Compromise
NA	Not Addressed

Category	Scope items	Renovate existing Building with Additions	Solution	New High School	Solution
I	Bus parking	New building at East location after renovation,	O	New building at East location after new construction	O
I	Site traffic flow	Modify existing traffic patterns	C	All new traffic patterns	O
I	First Cost	Lower cost but higher risk of change orders.	O	Higher cost and lower risk of change orders.	C
I	Long Term value	Existing building has a service life	C	All new systems	O
I	Utilities below building	Should be replaced; will require extensive floor slab removal & excavation inside building.	C	All new as part of construction.	O
I	Master Plan site, Campus site	Does not allow for best solution.	na	Provides long-range planning opportunities.	O
I	Mechanical Systems	Minimal space above Corridor ceilings limits the ability to install a 4 pipe ducted HVAC system similar to the new High School. With phased construction, existing systems need to remain operational while new systems are being installed.	C	New building layout and design will account for efficient, maintainable HVAC system.	O
I	Plumbing Systems	The existing toilet rooms do not meet current ADA guidelines and will require extensive renovations. All Under slab waste lines will be replaced from the existing tunnels to the fixtures. Domestic water well tanks are at the end of their useful life.	C	New building layout and design will account for the plumbing system. All areas will meet the current ADA requirements.	O

Heat Map Comparison: Renovation v. New

Category P : Construction Phasing and Campus Impact

Solution	
O	Optimal
C	Compromise
NA	Not Addressed

Category	Scope items	Renovate existing Building with Additions	Solution	New High School	Solution
P	Phasing & impact on ongoing building programs	Daily impact.	C	Limited impact on building program.	O
P	Phasing & Impact on student arrival and pick-up	Constant revisions based on the phasing.	C	Changes once the new building is occupied until new parking lots are completely constructed.	C
P	Phasing & impact on staff	Constant noise, temporary barriers, odor and other nuisances.	C	East and West remain as is until construction is complete. Then there will be one large move to the new building and temporary measures on site until the buildings are demolished.	C
P	Phasing & impact on parents	During construction access will change frequently.	C	East and West remain as is until new building is complete. During demo there will be temporary traffic patterns.	C
P	Hazardous Materials Removal	Has to be done as renovations occur.	O	Will be performed after moving into the new building and prior to demolition.	O
P	Neighbor Impact	Longer construction timeline means longer nuisance.	C	Master planning of the site offers opportunities to respond to neighbor concerns.	C
P	Time to project completion	Renovation 1 1/2 years longer	C	3 years construction, 1 year demolition and site	O
P	Construction Safety	Extra precautions to keep school first, construction second.	C	Clear separation of construction and students/staff	O

2021 Boehm and GESA project priorities



Item #	School	Energy Conservation Measure (ECM)
1	Afton	Interior LED lighting upgrade
2	Edgewood	HVAC upgrade in-kind
3	Edgewood	Interior LED lighting upgrade
4	E Roosevelt	Interior LED lighting upgrade
5	Makefield	Interior LED lighting upgrade
6	Manor	Chiller replacement, etc. (C.O.#1)
7	Manor	Vertical HVAC unit replacements
8	Manor	Domestic HW replacement, etc.
9	Oxford Valley	Chiller replacement, etc.
10	Penn Valley	Domestic HW replacement, etc.
11	Penn Valley	Vertical HVAC unit replacements
12	Penn Valley	Chiller replacement, etc.
13	Quarry Hill	Chiller replacement, etc.
14	Quarry Hill	Domestic HW replacement, etc.
15	Quarry Hill	Vertical HVAC unit replacements
16	Quarry Hill	Interior LED lighting upgrade
17	Walt Disney	Chiller replacement, etc.
18	Wm Penn MS	Interior LED lighting upgrade
19	Wm Penn MS	Domestic HW replacement, etc.
20	11 schools per list	Controls recommissioning

The Boehm renovation qualified for a PlanCon debt service reimbursement which is no longer available to school capital projects

The GESA project generates energy savings, PCO rebates and addresses high priority needs in 14 buildings



2021 Demographic information



PHS Projections School year 2021-2022 through 2030-2031					
Enrollment	9	10	11	12	Total
2021-2022	754	696	657	747	2854
2022-2023	743	754	696	657	2851
2023-2024	684	743	754	696	2878
2024-2025	684	684	743	754	2866
2025-2026	679	684	743	743	2849
2026-2027	644	679	684	743	2750
2027-2028	610	644	679	684	2617
2028-2029	650	610	644	679	2583
2029-2030	632	650	610	644	2536
2030-2031	563	632	650	610	2455

Source: 2018 Bonnett-Sundance Demographic Study



Project FAQs



1. How to renovate West without disruption to school?

Strategic phasing of the project using the new addition as swing space to relocate students/staff during the renovation activities and hard barriers for separation of work areas from student spaces will minimize disruption. Renovation work can be scheduled over summer breaks but will result in longer construction phase. Roof work needs to be cold applications to avoid odors. Summers will be intense. Night work will be necessary all year

2. Time length difference between two options for construction (renovation v new).

Renovation: 2 years addition for swing space + 2 more years for reno + 2 years of abatement and demo
New construction period 3 years (New building) + 2 years abatement, demo, paving and fields.

*Depends on level of renovation and phasing of work during school year vs Summer work.

3. Sequence of events - Demo / Renovation / Build

HS Reno/Addition – Build new addition, renovate existing spaces, abate/demolish East, VP

New HS – Build new, abate/demolish, sitework for parking and access

4. Increase operating cost (renovation vs. build).

HS Reno - addition will naturally increase operation costs, new systems should be more efficient

New HS – less square footage + new efficient M/E/P systems should reduce operating costs

Renovation will have roughly 50,000 SF of added space and utility costs



Prelim Geotech Testing Completed



TABLE II INFILTRATION RATES AT TEST LOCATIONS					
Test Hole Number	*Ground Surface Elevation, ft.	Infiltration Depth, ft.	Test Interval, min.	Final Drop in Water Level, in.	**Raw Infiltration Rate, in./hr.
DR-101A	100.0	4.0	30	0.250	0.50
DR-102A	100.0	3.5	30	0.125	0.25
DR-103A	100.0	3.0	30	0.125	0.25
DR-105A	100.0	2.5	30	0.125	0.25
DR-106A	100.0	3.5	30	0.250	0.50
DR-107A	100.0	4.0	30	0.875	1.75
DR-108A	100.0	2.0	30	0.625	1.25
DR-109A	100.0	4.0	30	0.500	1.00
DR-110A	100.0	3.0	30	0.250	0.50
DR-111A	100.0	4.0	30	0.500	1.00
DR-112A	100.0	3.0	30	0.375	0.75
DR-113A	100.0	4.0	30	1.000	2.00
DR-114A	100.0	3.0	30	0.250	0.50
DR-115A	100.0	4.0	30	0.250	0.50
DR-116A	100.0	4.0	30	0.250	0.50
DR-117A	100.0	4.0	30	0.375	0.75
DR-118A	100.0	3.5	30	0.125	0.25
DR-119A	100.0	3.0	30	0.500	1.00
DR-120A	100.0	4.5	30	0.250	0.50
DR-121A	100.0	5.0	30	0.875	1.75
DR-122A	100.0	3.0	30	0.250	0.50
DR-123A	100.0	5.0	30	0.750	1.50
DR-124A	100.0	4.0	30	0.375	0.75
DR-125A	100.0	6.0	30	0.375	0.75
DR-126A	100.0	6.5	30	0.250	0.50
DR-127A	100.0	6.0	30	0.250	0.50
DR-128A	100.0	3.0	30	0.375	0.75

Notes: * The ground surface elevations of the test pit and infiltration test are based on an arbitrary surface elevation of 100.0'.

** In accordance with the PA BMP Manual, a safety factor should be applied to the raw infiltration rate. For this site and based on the soil types encountered, EEI recommends a safety factor of 2.0.

C. GROUNDWATER

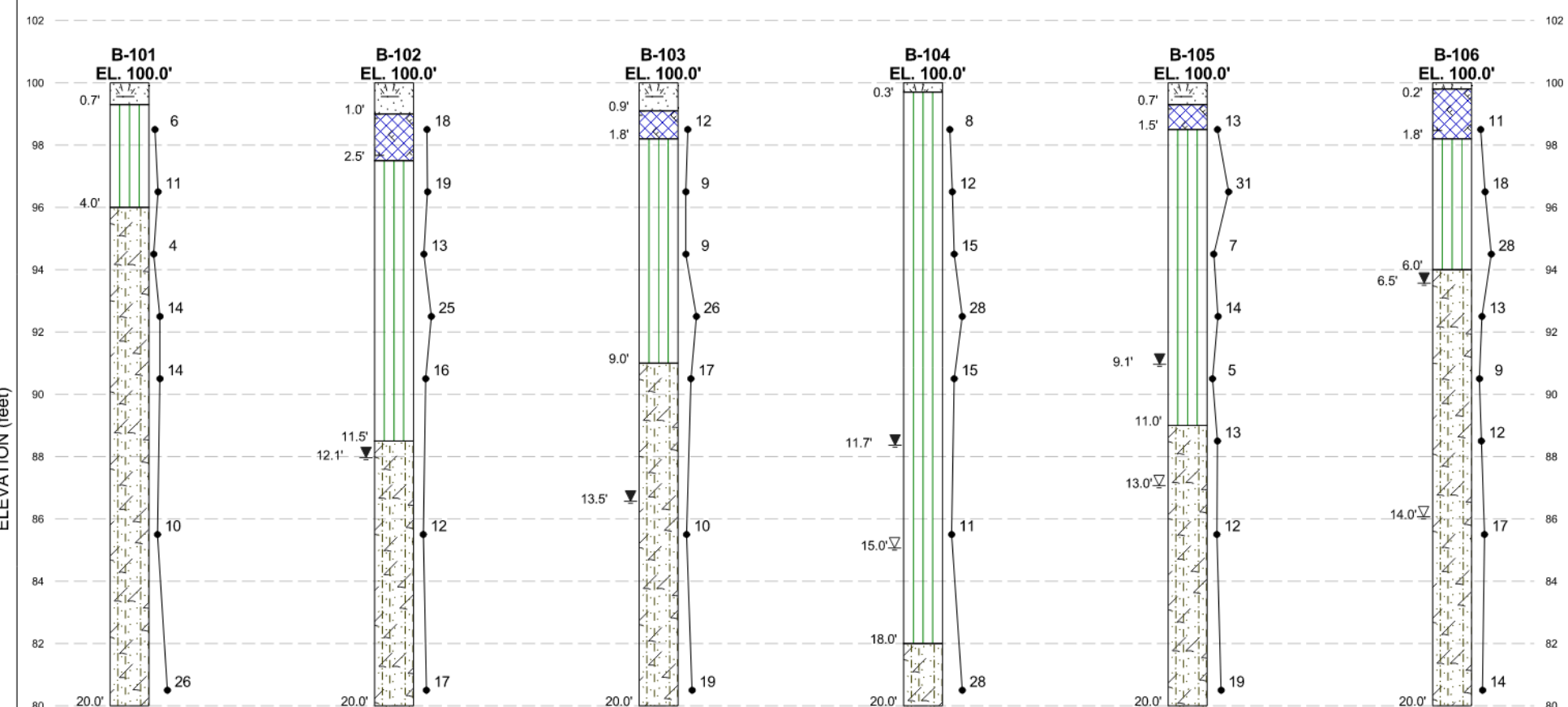
Groundwater was initially encountered at three (3) boring locations at depths ranging from 13.0 to 15.0 feet below the existing ground surface. Subsequent groundwater readings were taken after the completion of the borings. Five (5) borings rendered subsequent groundwater readings at depths ranging from 6.5 to 13.5 feet below the existing ground surface. It should be noted that the groundwater observations were made at the time of the subsurface investigation, and that groundwater elevations fluctuate with daily, seasonal, and climatic variations. The documented groundwater depths during the drilling operation are shown in Table II.

TABLE II GROUNDWATER DEPTHS AND ELEVATIONS		
Testing Location	Initial Groundwater Depth, ft.	Subsequent Groundwater Depth, ft.
B-101	-	-
B-102	-	12.1
B-103	-	13.5
B-104	15.0	11.7
B-105	13.0	9.1
B-106	14.0	6.5

One (1) sample of the Stratum I soil was tested in the laboratory for natural moisture content. The result yielded a natural moisture content value of 26.4 percent. Based on visual observations, supported by laboratory testing, these soils are considered above optimum moisture content for this soil type. Therefore, these soils will require time for aerating and drying prior to use as structural fill.





One (1) sample of the Stratum II highly weathered rock was tested in the laboratory for natural moisture content. The result yielded a natural moisture content value of 20.8 percent. Based on visual observations, supported by laboratory testing, these soils are considered slightly above optimum moisture content for this material type. Therefore, the soils will require moisture treatment and/or time for aerating and drying prior to use as structural fill.







Rock was not encountered. More study will be required once a design is assembled

Lithology Graphics

-  TOPSOIL
-  FILL - Brown to Gray Sandy Silt with Rock Fragments
-  STRATUM I - Brown to Gray Sandy Silt to Silty Sand with Gravel
-  STRATUM II - Brown to Gray Silty Clay with Sand to Silt with Sand (Highly Weathered Schist)

-  Initial Groundwater Level
-  Subsequent Groundwater Level



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Project Number: 36152.00 Date: 7/31/23 SHEET: A-102