



**HENLEY MIDDLE SCHOOL
AUXILIARY GYM ADDITION**

**ALBEMARLE COUNTY
PUBLIC SCHOOLS,
VIRGINIA**

**Design Development /
Preliminary Design**

November 14, 2014

BCWH Project No. 2014.17



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Design Development Submittal

Design Team:

Architects

BCWH Architects

Richmond, Virginia

Civil Engineering

Timmons Group

Charlottesville, Virginia

Structural Engineering

Dunbar Milby Williams Pittman & Vaughan

Richmond, Virginia

Mechanical/Electrical Engineering

Simmons, Rockecharlie, & Prince, Inc.

Richmond, Virginia

PROJECT PROGRAM SUMMARY

Henley Middle School is located at 5880 US 250, Rockfish Gap Turnpike. The building is a one story masonry structure originally built in 1965 with additions constructed in 1998 and 2004. The entrance from US 250 to the site is shared by Brownsville Elementary School. Each school has its own, separate parking lot. Henley Middle School is west of the entry drive.

The Physical Education department currently has approximately 140 students per class period, divided into four classes. The existing gymnasium reasonably houses two classes at one time and a third class locates into the health classroom. The fourth class either uses the outdoor playing fields or is brought inside and insufficiently shares the indoor spaces. The existing gymnasium is the western most area of the existing school building and is a double height masonry structure.

The proposed project will increase the teaching capacity of the Physical Education department by adding a 7,400 square foot structure. The addition will provide multiple teaching spaces of various sizes that correlate to various physical education and fitness teaching and training methods. The addition of the new structure combined with the existing facilities will be able to accommodate the current approximate 140 students with room for growth to 200 students.

The addition will be of masonry and steel construction built to connect to the northwest corner of the existing gymnasium. The structure will consist of a large multi-purpose space, a fitness room, a large storage room that will store both indoor and outdoor equipment, two single-occupant toilet rooms, and an enlarged circulation connector that can be used for breakout instructional / activity space. There is an existing small structure off the back of the existing gym that will be reused for its storage room and vestibule. The existing vestibule will be renovated and become a main exterior (community) entry to the addition and existing main gymnasium. The multi-purpose space will be similar to the existing gymnasium height at about twenty feet clear from finished floor to bottom of structure. The fitness room and circulation corridor will be a single story addition at a lower height.

The site is lined by trees to the west and has playfields to the north. The existing school building is to the east and there are asphalt game courts and the bus loop to the south. There will be multiple glass windows and storefront to allow natural light into the spaces and make visual connections to the exterior environment with views towards the tree line and outdoor play areas. The structure has been designed to allow outdoor activities on all sides with direct access from the new addition. The windows will provide a visual connection between those activities and the building's interior. Between the new and existing buildings, a courtyard is created, which will be programmed for physical and general education. The courtyard is bounded by the fitness room to the west and the new circulation space to the south; both will have windows and doors along their elevations to create visual and physical connections between the courtyard and interior spaces.

The addition is proposed to be technologically robust with wireless access, interactive boards, digital capture cameras, projectors, and data display monitors. The scope of the technology includes locations in the multi-purpose space, fitness room, and the enlarged circulation space. The wholeness of the physical and technology environments of the project will allow these new spaces to be used for the physical education curriculum as well as other, core curricula and programs of the school. Additionally, the program is designed to accommodate use by the surrounding community.

New landscaping will respond largely to regulatory requirements. Two student entrances from the bus loop to the existing school will receive canopies. Ground mounted mechanical equipment along the bus loop will receive physical screens to help blend them into the surroundings. The existing gymnasium will receive new retractable goals that can be raised to better serve the space during assemblies, a new sound system, and window openings to allow natural light into the space.

CIVIL/LANDSCAPE NARRATIVE

Proposed Site Improvements

The proposed site will include the relocation of the existing playground, as well as restriping of the outdoor courts. Additionally, the courtyard created between the auxiliary gym and the existing school will feature some basic hardscape. Interconnectivity between the new structure and the surrounding areas will be made accessible either through concrete sidewalks or, as is the case where the building intersects the existing outdoor court space, through stairs and a ramp.

The existing playground will be relocated, accommodating the building footprint, while preserving the play space. The existing play structure, plastic border, and mulch will be noted for reuse at the future location. A new underdrain system will be installed to provide an adequate drainage system.

Restriping of the exterior courts will include a full basketball court, two free throw/basketball key areas, as well as multiple four square courts. The basketball courts are being striped in such a way to preserve the basketball hoops in their present locations.

The paved island in the bus loop will be removed to serve as an offset of the new building as it relates to stormwater requirements. The area will be seeded and planted with a few trees. This removal of pavement will also set up the area for future stormwater enhancement if the school so chooses.

A portion of the existing drainage system is being removed and replaced with a ductile iron pipe that will run underneath the building. The pipe will capture water from the existing bus loop. Downstream the pipe system will also capture stormwater from a proposed biofilter that will capture roof area as well as some surrounding area made up of turf and hardscape. The biofilter, combined with the removal of the asphalt island in the bus loop will allow for both water quality and flow requirements to be met on the site.

ARCHITECTURAL NARRATIVE

New Construction:

Fire Area:

The addition is an isolated fire area from the existing building. To achieve this there is a masonry fire wall to separate the buildings with a one inch expansion joint. The fire wall is a double wall type. At the circulation connection to the existing gym there will be an overhead fire shutter. At the circulation connection to the class wing corridor there will be dual swing doors.

Walls:

Exterior walls: Will be cavity walls that have a face brick exterior, typically a concrete masonry wall interior, and insulation and air barrier in the cavity. At select locations above large span windows the concrete masonry will be replaced with drywall and metal stud construction and will include batt insulation.

Interior walls: Will be concrete masonry.

Finishes:

Floors: will have vinyl composition tile in the circulation spaces, walk off carpet in the Break-Out space, sports vinyl flooring sheet in the Fitness room, and indoor turf in the Multi-purpose space. The toilet rooms will have ceramic tile, and the storage room will be sealed concrete.

Walls: will be painted. The toilet rooms will have full height ceramic tile.

Ceilings: in the Multi-purpose space, Fitness Space, Break-out space, and Storage will be exposed to structure above and painted. The circulation areas will have suspended acoustic tile. The toilets will have drywall.

Doors:

Interior doors will be storefront full glass with one quarter inch glass and include transoms and sidelights at the fitness space. Storefront full glass with laminated 9/16+glass at the Multi-purpose space. The Storage room interior door will be flush wood and steel frame. Fire rated wood and steel frame at the connection to the existing classroom building. Steel frames shall be fully welded.

Exterior door to the storage room will be hollow metal.

Curtainwall and storefront:

Exterior glass areas will be curtainwall or storefront with laminated, insulated, low-e glass at the Multi-purpose space up to a height of approximately sixteen feet. Glass higher than sixteen feet and at locations other than the Multi-purpose space will not be laminated.

The glass wall at the Fitness space will incorporate a folding glass opening.

Roof:

Will be EPDM with a dark color. The areas will be a single slope to a gutter with downspouts.

Furnishings:

Metal shelving in the storage room. Marker/interactive boards in the Break-out space, Fitness room, and Multi-purpose space.

Renovation:

The existing storage room connected to the existing gym at the northwest corner has a vestibule that will be renovated to become a vestibule for the new structure. The north wall will be demolished to create the connection to the new structure. The existing exterior doors will be removed and replaced with a new storefront system with full height glass doors. There will be a transom and possibly sidelights, the glass will be one inch insulated low-e. The vestibule will receive a new vinyl composition tile floor, suspended

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acoustic tile ceiling, and fluorescent or LED lighting. A pre-manufactured canopy will be installed in front of the entrance doors and incorporate a masonry pier.

Existing Gym Improvements:

The existing gym has six stationary basketball goals that will be replaced with new operable types. There will be four to six clerestory, storefront windows with one inch insulated low-e glass added to the west façade to allow natural light into the space. The windows will be approximately two feet tall by five feet wide located at the masonry bearing level of the roof joists.

Existing Entrance Improvements:

The two student entrances on the west side of the building at the bus parking will have pre-manufactured canopy systems installed. Masonry piers may be incorporated into the layout of the support columns. The canopies will be structurally isolated from the existing building. The existing chain link fence enclosing the existing mechanical yard will be replaced and the enclosure increased to incorporate the existing recessed mechanical space entrance with a new chain link fence with slat inserts.

ARCHITECTURAL SPACE SUMMARY

<u>SPACE</u>	<u>SF</u>
Multi-purpose space:	4,044 SF
Fitness Room:	1,353 SF
Break-out space:	573 SF
Circulation:	164 + 291 = 455 SF
Toilets:	56 + 56 = 112 SF
<u>Storage:</u>	<u>214 SF</u>
SUBTOTAL NET SF:	6,751 SF
<u>Existing Vestibule:</u>	<u>160 SF</u>
TOTAL NET SF:	6,911 SF
BUILDING	
GROSS SF (Existing Vestibule not included):	7,498 SF

STRUCTURAL NARRATIVE

Existing Structure

Based on existing drawings provided by the owner, the original building construction appears to be single level. The typical roof structure of the existing building and existing gymnasium is composed of steel joists and metal deck bearing on internal and external CMU masonry walls.

Structural Scope

a. Geotechnical Information/Foundation Types and Conditions

The geotechnical investigation for this project has not been completed at this time. However, based upon previous construction on this site, we anticipate that the new construction may be supported on shallow spread footings.

b. Type of Construction/Structural Materials

Concrete . ASTM-C94

Slab-on-grade . 3500 PSI normal weight

Foundations . 3000 PSI normal weight

Reinforcing Steel . ASTM A615, grade 60

Structural Steel . ASTM A992, $F_y = 50$ KSI, W-SHAPES

ASTM A500 GR C, $F_y = 50$ KSI, HSS SHAPES

ASTM A36, $F_y = 36$ KSI, ALL OTHER SHAPES

Concrete Masonry Units . ASTM C90

The structure is being designed in accordance with ACI 318-11, ACI 530-11 and AISC 360-10.

c. Special Features/Conditions

A firewall will need to be located along the north side of the existing gym. The new and existing walls will be separated by a 1+expansion joint and each wall will have a 2-hour fire rating. A cantilevered masonry portal will be constructed around the door opening at the existing vestibule.

Building expansion joints will be required between new and existing construction.

d. Structural Systems

i. Foundations

We anticipate that the new foundations will be shallow spread footings. Exact soil bearing pressure and depths of footings will be determined by the owner's geotechnical engineer.

ii. Slab-on-grade

Slabs-on-grade will be a minimum of 4" thick, over vapor retarder, over 4" minimum porous fill. Slabs will be reinforced with WWF or polypropylene micro-fiber reinforcing.

iii. Columns and Bearing Walls

The portion of the existing building to be renovated is completely supported on existing masonry bearing walls.

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Most plan areas of the Gymnasium, Auxiliary Gymnasium, Lockers and Mechanical Room will utilize exterior and interior masonry walls as bearing walls. All other portions of the building will be supported on steel columns. HSS6x6 and HSS8x8 columns will typically be used.

iv. Elevated Floor Structure

There are no elevated floors.

v. Roof Structure

Typical roof deck will be 1 1/2", 22 gage galvanized acoustical steel deck spanning 5'-0" between open web steel joists on lower roofs. Roof deck at the Gymnasium will be 3", 20 gage galvanized acoustical steel deck spanning 10'-0" between long span steel joists. The bottom of all roof deck will receive a baked-on enamel shop primer to allow for field painting.

e. Lateral Force Resisting System

Where available, reinforced masonry shear walls will be used. In some locations steel moment frames will be used.

f. Structural Code and Design Loads

Building Code: Virginia Uniform Statewide Building Code (2012 Edition).

Building Occupancy Category: III

Snow Loads

$$(P_f = 0.7 \times 1.0 \times 1.0 \times 1.1 \times 30 = 23.1 \text{ PSF}) \quad 23.1 \text{ PSF (MIN.)}$$

(C_e) (C_t) (I) (P_g)

Live Loads

Roof	30 PSF (CPSM MIN)
Floor	
Storage	125 PSF
Mechanical	150 PSF
Gymnasium	100 PSF
Lobbies/Corridors (main floor only)	100 PSF
Fitness Room	150 PSF

Wind Load

Basic Wind Speed	120 MPH (Ultimate)
Exposure	B
Importance	NA (2012 Code)

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Seismic

Importance Factor	I = 1.25
S_s	19.3
S_1	6.8
S_{DS}	20.6
S_{D1}	10.8
Site Class	D (Assumed)
Seismic Design Category	B
Response Modification Factor	3.5
Deflection Amplification Factor (C_d)	2.25
Basic Structural System = Bearing Wall Systems	
Seismic Resisting System = Intermediate Reinforced Masonry Shear Walls	
Analysis Procedure = Equivalent Lateral Force Procedure	

FIRE PROTECTION AND PLUMBING NARRATIVE

Work will be performed in accordance with the Virginia Uniform Statewide Building Code 2012 (IBC/IPC 2012).

Fire Suppression

There will be no fire suppression system.

Domestic Water

The existing building cold water system shall be extended as necessary to new plumbing fixtures.

The existing building domestic water heating system shall be extended to new fixtures as required. If new fixtures cause the existing capacity to be exceeded, then new tank type or instantaneous type water heaters shall be added as necessary.

Sanitary/Storm

Interior sanitary waste / vent piping will be cast-iron below slab and above grade. Interior domestic cold / hot and solar water piping will be hard drawn Type L copper above grade. Interior storm drain piping will be cast iron or solid-wall PVC below slab and cast iron above grade. Interior natural gas piping will be Schedule 40 black steel.

Plumbing Fixtures

Plumbing fixtures will be water-conserving type.

MECHANICAL NARRATIVE

Work will be performed in accordance with the Virginia Uniform Statewide Building Code 2012 (IBC/IMC 2012).

General Description

The building heating, ventilating and air conditioning (HVAC) system is Rooftop Air Handling Units; DX / hot water (DX / HW) with air distribution via exposed fabric ductwork.

The existing Boilers will be utilized to provide Hot water to the new units for heating.

The heating water design temperature difference shall be 20°.

Environment Control

The building HVAC systems will be controlled by an extension of the existing Siemens DDC building automation system (BAS) with the main panel with full capabilities of scheduling, controlling, monitoring and alarming for the system. The BAS will include demand limiting functions. Thermostats, humidistats, temperature sensors, pressure sensors, current sensors, control valves, automatic dampers with operators, etc, shall interface and be compatible with the BAS. Electronic controls will be programmable and provide for temperature control, humidity control, occupied / unoccupied scheduling, etc.

ELECTRICAL NARRATIVE

Work will be performed in accordance with the Virginia Uniform Statewide Building Code 2012 (IBC 2012/NEC 2011).

Power

The main electrical service is rated 277/480V, 3 phase; fed underground from the local Utility Company. The main service entrance feeds a 2000A switchboard. The switchboard is located in a dedicated electrical room.

A new 277/480V panel will be provided to power the new lights, HVAC and a new 480V to 120/208V transformer. A new 120/208V panel will be provided. New Conduit shall be run concealed in interior finished spaces and parallel or at right angles to the building structure. All conductors shall be Type THHN/THWN copper wire in conduit. Receptacles will be appropriately placed for serving equipment and convenience use. Wiring devices shall be heavy duty, specification grade. Fused safety switches will be provided for all HVAC equipment.

Lighting

Interior lighting will be predominantly fluorescent or LED. Fluorescent fixtures shall utilize T8, or compact lamps and electronic ballasts. Lighting will be controlled by local switches and occupancy sensors. Exterior building mounted lighting will be provided.

Fire Alarm System

New devices in the addition will be compatible with the existing building fire alarm system. Additional modules and batteries will be provided as needed for a fully functional system.

Data, Telephone, Intercom, Clock, Television and Security systems:

Empty conduits and boxes shall be provided for these systems. Owner will provide devices and wiring and will connect to the existing head ends.

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PROJECT SCHEDULE

Schematic Design (3 months):	Mid July . October 9
School Board Approval:	October 9
Design Development (1 month):	October 10 . November 14
Exterior Materials	
Windows/Glazing	
Interior Finishes (i.e. flooring)	
Courtyard Details	
Improvements to Student Entrances	
MEP Concept	
Hive Relocation	
Shed Locations	
Transmit DD progress set to Owner:	November 14
Submit Civil:	November 21
School Board Filing:	December 1
School Board Approval:	December 11
Construction Documents (1 month):	November 15 . December 31
Finish Schedule	
Existing Gym Improvements	
Technology	
Equipment/Furnishings	
Security/Lock Down Procedures	
Permit . Bldg Permit Dpt. Overview:	December 11
ARB Filing:	December 5
Permit:	January 2015
Bidding:	February 2015
Contract Award:	March 2015
Construction (10 months):	March 2015 . December 2015
Occupancy:	January 2, 2016

LIST OF DRAWINGS FOR DESIGN DEVELOPMENT

Full Size Set of Drawings – Separate Package

General Drawings

- G001 Cover Sheet
- G002 Schedules, Legends, Partition Schedule
- G101 Fire Safety and Overall Plan

Civil Drawings

- C0.0 Cover
- C1.0 Notes and Details
- C2.0 Existing Conditions and Demolition Plans
- C3.0 Erosion and Sediment Control Notes and Details
- C3.1 Erosion and Sediment Control Plans
- C4.0 Layout, Grading and Drainage Plans
- C5.0 Stormwater Summary Plan and Profiles
- C5.1 Stormwater Management Plan

Architectural Drawings

- A101 Floor Plan and RCP
- A102 Roof Plan and Details
- A401 Building Elevations and Sections
- A501 Wall Sections

Structural Drawings

- S001 General Structural Notes
- S101 Foundation Plan
- S102 Low Roof Framing Plan
- S103 High Roof Framing Plan
- S201 Typical Foundation Plans and Details
- S202 Typical Details
- S301 Typical Roof Framing sections and Details
- S302 Typical Details
- S303 Lower Roof Framing Details and Section
- S401 Lintel Schedule

Plumbing Drawings

- P101 Floor Plan

Mechanical Drawings

- M101 Floor Plan
- M102 Floor Plan

Electrical Drawings

- E101 Electrical Legend
- E201 Floor Plan - Lighting
- E301 Floor Plan - Power