



LAW SCHOOL MEETING PAVILION STUDY COLLEGE OF WILLIAM & MARY

Project Narrative

August 6, 2021

G&HA Commission No.: 20099PW03

Architect

Glavé & Holmes Architecture

2101 East Main Street

Richmond, VA 23223

(804) 649-9303

(804) 343-3378 fax

www.glaveandholmes.com

Draper Aden Associates

Civil Engineer

2 Bayport Way, Suite 120

Newport News, VA 23606

T: 757.599.9800

www.daa.com

Lynch Mykins Structural Engineers

Structural Engineer

1503 Santa Rosa Road, Suite 210

Richmond, VA 23229

T: 804.346.3935

www.stroudpence.com

Colonial Engineered Solutions

MEP & FP Engineer

223 Bulifants Blvd Suite E

Williamsburg, VA 23188

T: 757.634.3653

www.cesolutions-inc.com

Table of Contents

SECTION	PAGE
01 Summary.....	2
02 Architectural (Divisions 02 – 14) [Glavé & Holmes Architecture]	8
03 Structural (Divisions 03 – 05) [Lynch Mykins Structural Engineers]	16
04 Acoustical Design (Divisions 03 – 13) [Glavé & Holmes Architecture]	18
05 Interior Finishes (Division 09) [Glavé & Holmes Architecture]	20
06 Fire Suppression (Division 21) [Colonial Engineered Solutions]	21
07 Plumbing (Division 22) [Colonial Engineered Solutions]	22
08 Mechanical (Division 23) [Colonial Engineered Solutions].....	24
09 Electrical (Division 26) [Colonial Engineered Solutions]	28
10 Audio-Visual (Division 27) [Glavé & Holmes Architecture].....	33
11 Electronic Safety and Security (Division 28) [Colonial Engineered Solutions]	34
12 Civil and Sitework Systems (Divisions 31 – 35) [Draper Aden Associates].....	34

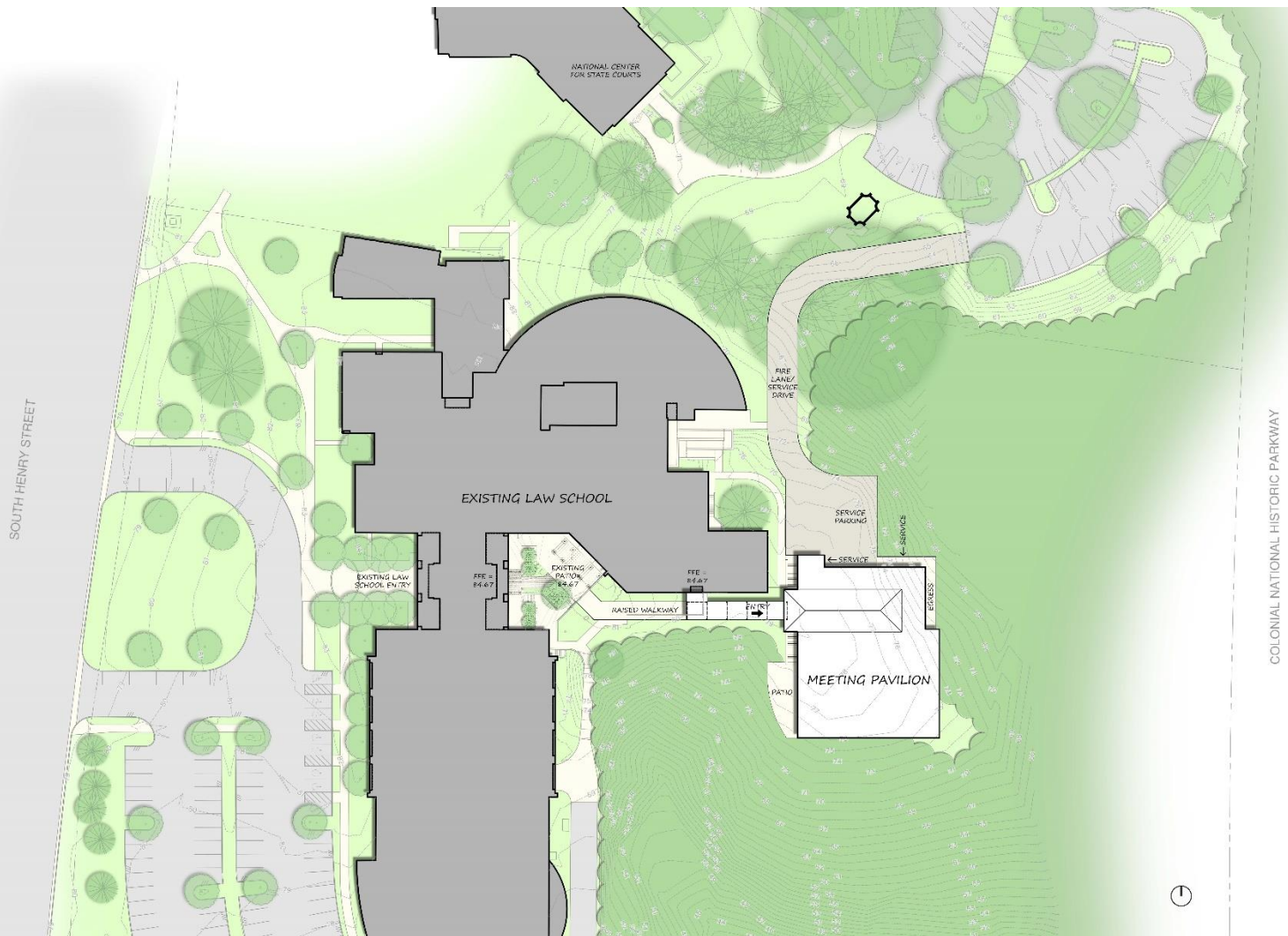
01 Summary

Description:

The project consists of a detached addition to the existing law school. The addition will include an assembly room accommodating approximately 500 people, a prefunction space, catering, offices, a conference room and associated support spaces (mechanical/electrical, restrooms, stairs, elevator, janitor closet, audio/visual closet, and storage).

Location:

The meeting pavilion site will be located at the rear of the existing Law School. The front entrance will generally align with the Law School main entrance and existing patio. A mobile trailer currently exists on the project site and will require removal. Additionally, an existing raised wood walkway and a concrete ramp with brick masonry retaining wall located between the meeting pavilion site and the existing main entrance/patio will be removed. Significant regrading and retaining walls will be required for the meeting pavilion site and fire lane/service road.



Site Plan

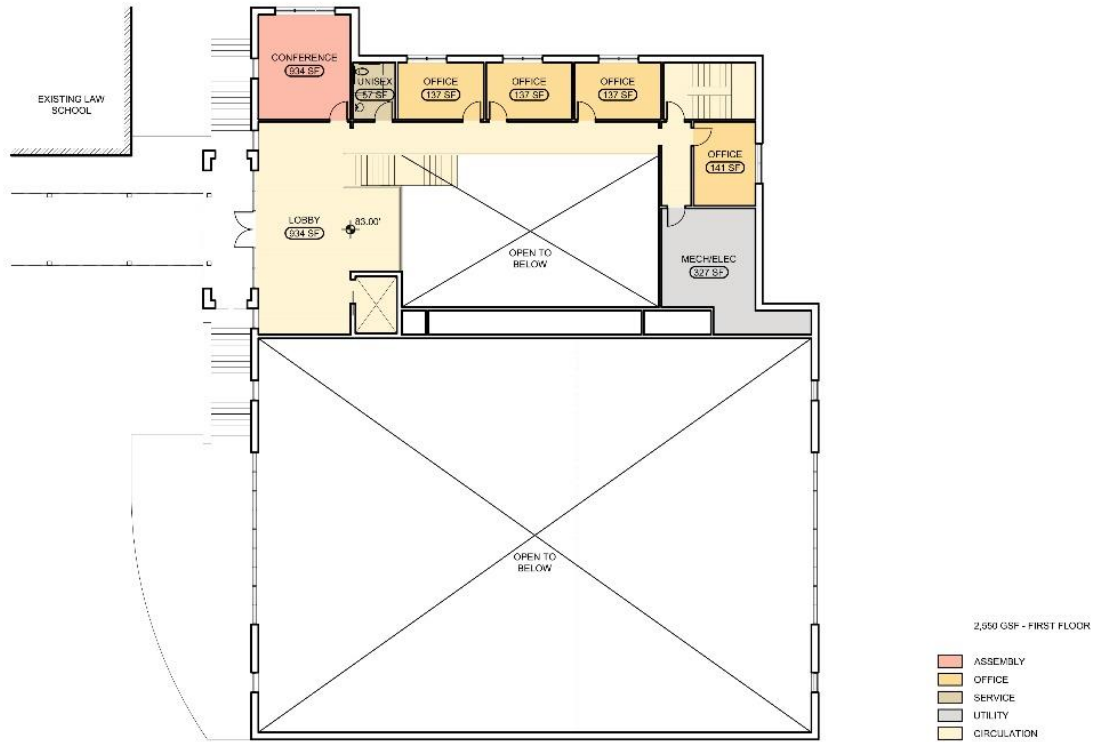
Site:

A raised walkway will connect the existing Law School main entrance and patio to the meeting pavilion creating an accessible entrance. A portion of the raised walkway will be covered with an arched pergola creating a weather protected, pedestrian connection between the existing law school and the meeting pavilion. A retaining wall will be required along the south side of the raised walkway. Two exterior stairs are to be provided adjacent to the meeting pavilion front entry to connect to the service entry at the north of the building and to the new patio at southwest corner of the building. A service road/fire lane will extend to the building from the National Center for State Courts parking lot to north. A small parking area will be provided at the service entry on the north side of the building. A pedestrian egress path will connect the east side of the building to the service entry. Retaining walls will be required at the north and west perimeters of the east pedestrian egress pathway and the service entry parking.

Building:

The building will consist of two levels. The first floor/entry level of the meeting pavilion will have a lobby, conference room, offices, and a mechanical/ electrical room. The lobby and corridor of the first floor will be open to a two-story prefunction space on the level below. A monumental stair and elevator will be provided to connect the lobby to the prefunction space. At the lobby entry, a hipped roof will project over the entrance to create a covered entry and the roof will extend east over the lobby and prefunction space. Clerestory windows will provide daylight to the prefunction space at the north, south, and east perimeter of the hipped roof. An egress stair will be provided at the northeast corner of the building.

In addition to the prefunction space, the lower level will also contain a two-story height assembly room. The entrance to the assembly room will be from the prefunction space through three 9' tall pairs of double doors. The presentation wall and portable platform/stage will be at the south end of the assembly room. An operable motorized partition will be provided to divide the assembly room into two separate spaces. The east and west exterior walls of the assembly room will allow daylight in from 2-story tall curtainwalls and windows openings. The west curtainwall will have two pairs of double doors that open to a paved exterior patio. Assembly support spaces will also be on the lower level including catering, storage, audio/visual closet, janitor closet, and restrooms.



First Floor Plan



Lower Level Plan



West Elevation

02 Architectural (Divisions 02 – 14) [Glavé & Holmes Architecture]

Applicable Building Codes

Virginia Uniform Statewide Building Code
Virginia Construction Code 2018 (USBC, Part I)
Virginia Mechanical Code 2018
Virginia Plumbing Code 2018
Virginia Fuel Gas Code 2018
Virginia Energy Conservation Code 2018
Virginia Statewide Fire Prevention Code 2018
National Electric Code (NFPA 70) 2014
National Fire Alarm and Signaling Code (NFPA 72) 2013
Installation of Sprinkler System (NFPA 13) 2013
Construction and Professional Services Manual 2020 Rev. 0

Accessibility Standards

Virginia Construction Code 2018 (USBC, Part I)
ICC A117.1, 2009
2010 ADA Standards for Accessible Design

Use and Occupancy Classification

Assembly Group A-3

Construction Type Classification

Construction type shall be Type II-B Non-combustible.

Building Area

Floor	Gross Area (SF)
Lower Level	10,550
First Floor	2,550
Total Building	13,100

Architectural Materials and Systems Description

A Substructure

A10 Foundations

A1010 Standard Foundations

1. Refer to Structural Section.

A40 Slabs-on-Grade

A4010 Standard Slabs-on-Grade

1. Refer to Structural Section.

A60 Water and Gas Mitigation

A6010 Building Subdrainage

1. Perimeter Foundation Drainage

B Shell

B10 Superstructure

B1010 Floor Construction

1. Refer to Structural Section.

B1020 Roof Construction

1. Refer to Structural Section.

B1080 Stairs

1. Concrete filled metal pan stair framing

B20 Exterior Enclosure

B2010 Exterior Walls

1. Typical above grade exterior wall system includes brick, 2" air space, 1 1/2" rigid insulation, air barrier over 5/8" exterior gypsum sheathing on 6" light gauge metal stud framing @ 16" o.c. with 6" mineral wool batt insulation and 5/8" gypsum wall board on the interior side.
 - a. Brick Veneer (Woodmold) – Match Existing Brick on Law School
 - b. Soldier Accent Brick (Wire Cut) at top of wall, window/door headers
 - c. Special brick shapes for masonry arches – Match Existing Brick on Law School
 - d. Rusticated brick base – 1/2" brick reveals.
 - e. R-13 batt + R-7.5 rigid (continuous insulation)
 - f. Copper flashings, cavity vents and weep holes.
2. Slate stone window sills.
3. Brick arches with concealed steel lintel system.
4. Cornice at sloped roof – Precast

5. Parapets at low sloped roofs - stacked bond soldier course with aluminum coping – Match Existing Law School
6. For below grade walls refer to Structural Section

B2020 Exterior Windows

1. Stationary Windows

a. Aluminum storefront (Conference, Offices, Lobby, Assembly, and Prefunction clerestory) and curtain wall system (Assembly).

- a) Factory fluoropolymer painted finish – custom color (bronze) to match existing Law School
- b) Fixed (Non-operable)

2. Glazing

a. Insulated units with tempered clear glass and low-e coating on the second surface.

B2050 Exterior Doors and Grilles

1. Exterior doors and frame –

- a. Aluminum Storefront (Main Entrance and Assembly West curtain wall)
 - a) Glazed full panel doors
 - b) Factory fluoropolymer painted finish - custom color (bronze) to match existing Law School
- b. Flush Hollow Metal (Service entries and Assembly East egress)
 - a) Factory painted finish - custom color (bronze) to match existing Law School

2. Hardware

- a. Exterior doors to have card readers
- b. Panic bars to be ‘push bar’ type
- c. Automatic door operators at main entry

B2070 Exterior Louvers and Vents

1. Mechanical Louvers

a. Factory fluoropolymer painted finish - custom color (bronze) to match windows

B30 Exterior Horizontal Enclosures

B3010 Roofing

1. Sloped roofs to have simulated slate with fluoropolymer painted finish Galvalume gutter and downspout system. Self-adhered air/water barrier, ¾” exterior-rated plywood sheathing, and R- 30 Polyisocyanurate insulation.

2. Low slope roofs to have fully-adhered 60-mil EPDM membrane roofing over R-30 Polyisocyanurate insulation with adhered coverboard. Tapered insulation to be utilized for surface slope to roof drains. Self-adhered air/water barrier and stainless or copper flashings.
4. Parapet conditions to have aluminum coping with fluoropolymer painted finish – custom color (bronze) to match existing Law School

B3020 Roof Appurtenances

1. Snow Guards at sloped roofs
2. Roof Drains at low-sloped roofs

B3060 Horizontal Openings

1. Roof access door.
2. Ladder access to roof.

C Interiors

C10 Interior Construction

C1010 Interior Partitions

1. Metal stud partitions
 - a. Non-bearing walls:
 - I. Type 1 - 3 5/8" metal studs @ 16" o.c. with 3.5" mineral wool batt insulation, 1 layer of 5/8" GWB on each side. Based on UL U419. (Standard interior walltype)
 - II. Type 2 - 3 5/8" metal studs @ 16" o.c. with 3.5 mineral wool batt insulation and 2 layers of 5/8" drywall on one side and 1 layer on the other side. Based on UL U419 with 52 STC laboratory rating. (For the following areas: Restrooms, conference rooms, offices.)
 - III. Type 2 - 6" metal studs @ 16" o.c. with 3.5 mineral wool batt insulation and 2 layers of 5/8" drywall on one side and 1 layer on the other side. Based on UL U419 with 52 STC laboratory rating. (For the following areas: Assembly and Prefunction.)
 - a. Provide stained wood paneling at assembly presentation wall and prefunction/assembly wall.
 - IV. Type 4 - 2 1/2" metal furring @ 16" o.c. with and 1 layer of 5/8" GWB on finish face. (Over CMU walls)
2. CMU partitions
 - a. Elevator and egress stairway will incorporate CMU partitions
4. Toilet partitions

- a. Toilet partitions to be solid phenolic core, ceiling hung, and seamless partition system complete with doors, panels and hardware.

C1030 Interior Doors

1. Interior non-rated doors

- a. Stained stile and rail solid core wood doors (20 – 25 STC)
- b. Assembly, conference, offices - Stained stile and rail solid core wood doors with gaskets (25-30 STC)

2. Interior fire-rated doors

- a. Egress Stair - Stained stile and rail solid core wood doors
- b. 1 hour required

3. Door frames

- a. Stained wood frames
- b. Labeled hollow metal frames where required by fire-ratings – Painted to match wood stain
- c. Applied wood trim, stained

4. Hardware

- a. Mortise locks
- b. Hinges - 5 knuckle, 3 minimum per door
- c. Finish – Oil-rubbed bronze (US 10b)
- d. Basis of Design - Corbin Russwin.
- e. In accordance with ICC/ANSI A117.1

C1070 Suspended Ceiling Construction

1. Suspended sound attenuating gypsum board ceilings

C1090 Interior Specialties

2. Interior directories and signage
3. Electric operable partition system (Assembly) Basis of Design – Hufcor 600 Series
4. Portable 300 sf platform/stage (Assembly)

C20 Interior Finishes

C2010 Wall Finishes

1. Interior partitions shall be sheathed with 5/8" gypsum wall board (GWB) and Level 4 finish typical.

2. GWB to be high-abuse resistant in public lobbies, corridors, and vestibules.
3. Moisture and mold resistant GWB to be used in bathrooms and housekeeping areas.
4. Refer Interior Finishes below for additional interior finish information

C2030 Flooring

1. Refer Interior Finishes Section below for interior finish information

C2040 Stair Finishes

1. Handrails

- a. Monumental Stair – Stained wood
- b. Egress Stair -Painted steel at egress stair

3. Guardrails

- a. Lobby and Corridor - Wood top rail, bronze posts, frosted glass panels.
- b. Egress Stair - Painted steel at egress stair (posts, pickets, top and bottom rail)

2. Treads & Risers

- a. Monumental Stair - Stained wood
- b. Egress Stair - Integral Rubber Flooring

C2050 Ceiling Finishes

1. Acoustical Panel Ceiling

- a. 2'-0" x 2'-0" with tegular edge
- b. Painted GWB perimeter soffits

2. Painted suspended GWB.

3. Sculptural wood ceiling. Basis of design: Geometrik – Geopanel Microperfo S

4. Acoustical Plaster. Basis of design: Pyrok – Star Silent

5. Refer to Interior Finishes Section below for additional information

D Services

D10 Conveying

D1010 Vertical Conveying Systems

1. Passenger Elevators

- a. Basis of Design – Otis Gen2
- b. No machine room or control room needed. Small hoistway with compact controller.

c. Locations – Lobby

d. Size

2) Passenger 3000 lb.

e. Finishes

1) Bronze cab with wood paneling, flooring to match lobby

D20 Plumbing

1. Refer to Plumbing Section

D30 Heating, Ventilation and Air Conditioning

1. Refer to Mechanical Section

D40 Fire Protection

1. Refer to Fire Protection Section

D50 Electrical

1. Decorative Fixtures
 - a. Location: Lobby, Prefunction, and Assembly
2. Wall Sconce
 - b. Location: Stairs
3. Recessed 4" LED Downlights
 - c. Location: Lobby, Restrooms, Conference Room, Assembly, Prefunction
4. Direct/indirect pendants
 - d. Location: Offices
5. Lay-in 2'x2' Fixture
 - e. All other areas
6. Refer to Electrical Section for additional information

E Equipment and Furnishings

E10 Equipment

E1040 Institutional Equipment

1. Catering
 - a. Reach-In Refrigerator
 - b. Ice Machine
 - c. Ice Bin
 - d. Water Filter, Ice

- e. Mobile Work Table
- f. Work Table W/ Sink
- g. Wall Shelf
- h. Shelving, Stationary
- i. Soap & Towel Dispenser
- j. Hand Sink
- k. Trash Can
- l. Mop Sink & Faucet
- m. Soiled Dishtable
- n. Dishwasher, Undercounter
- o. Pre-Rinse Unit
- p. Dishrack Shelf
- q. 3 Compartment Sink
- r. Wall Shelf
- s. Beverage Counter
- t. Glass Filler Faucet
- u. Iced Tea Brewer
- v. Coffee Maker
- w. Water Filer, Coffee/Tea
- x. Reach-In Refrigerator

E20 Furnishings

E2010 Fixed Furnishings

- 2. General
 - a. AWI Custom Grade Quality
- 3. Window treatments
 - a. Roller shades at aluminum storefront window openings.
 - b. Motorized roller shades at assembly curtain wall and two story tall storefront window openings.
- 4. Toilet Accessories
- 5. Solid surface vanity tops in restrooms
- 6. Refer Interior Finishes Section for additional information.

F Special Construction and Demolition

F30 Demolition

F3030 Selective Building Demolition

- 1. Remove existing single story, 1,000 sf mobile trailer
- 2. 100' x 4' concrete/masonry ramp and retaining wall
- 3. 130' x 6' raised wood deck walkway.

G Sitework

G20 Site Improvements

G2030 Pedestrian Plazas and Walkways

1. Raised walkway connecting existing Law School patio to meeting pavilion main entrance.
 - a. Brick Pavers on concrete slab, with concrete retaining wall.
 - b. Arched, painted steel pergola.
2. Exterior concrete stairs
 - a. Brick pavers.
 - b. Ornamental painted steel handrails and guardrails (posts, pickets, top and bottom rail)
3. Exterior patio at west end of assembly
 - a. Brick Pavers on concrete slab
4. Service parking
 - a. Asphalt Paving
 - b. Concrete retaining walls at north and east limits
5. Fire lane/Service drive
 - a. Asphalt Paving
6. East egress pathway
 - a. Brick Pavers on concrete slab
 - b. Concrete retaining walls at north and east limits

G40 Electrical Site Improvements

G4050 Site Lighting

1. Parking lot lighting at service entry.
 - a. Tamper / vandal resistant historic lamps
2. Building Exterior Accent Lighting
 - a. Recessed downlights at portico main entry
 - b. Wall washers at west building elevations.
 - c. Site lighting at west raised walkway/pergola and west patio.
 - d. Wall sconces at service entry and east egress

03 Structural (Divisions 03 – 05) [Lynch Mykins Structural Engineers]

Structural Design Live Loads, Wind Loads and Seismic Criteria:
2018 Virginia Uniform Statewide Building Code

Design Loads:

Risk Category	III
Roof	20 psf
Ground Snow, Pg	15 psf
2nd Floor	100psf
Snow Importance Factor, I	1.025
Wind, V (ultimate – 3 second gust)	125 mph
Exposure Category	B
Seismic Design Category	B
SS = .114	
S1 = .043	
Site Class D (Assumed)	
Seismic Importance Factor, I	1.25
Slab-on-grade	150 psf

Structural Materials:

Foundation Concrete	3000 psi, normal weight concrete
Slab-on-grade Concrete	3500 psi, normal weight concrete
Concrete Masonry Units	
Reinforcing Steel	F'm = 1,500 psi
Steel Beams	ASTM A615 Grade 60 W-Shapes – ASTM A992 Pipe – ASTM A53 Grade B HSS – ASTM A500 Grade B Channel, Angle, Plate – ASTM A36

System Selection:

1. Floor Construction:
 - a. The second floor/mezzanine will consist of 3.5 inches of lightweight concrete over 2 inch composite deck (5.5 inches total). The slab will be supported on steel beams. The beams will be supported on steel beams, on new masonry, and/or on steel columns.
2. Roof Construction:

- a. New roofs will generally be 1.5-inch-deep type B roof deck on sloping steel joists or beams on new steel framing or on Concrete Masonry Unit (CMU) walls.
 - b. Roof framing over the meeting area will span up to 67 feet
 - c. A portion of the roof structure over the meeting area will be designed to support a folding partition.
3. Exterior and Interior Walls:
- a. A portion of the new exterior walls will be below grade. These will be reinforced concrete retaining walls
 - b. The remaining exterior walls will be load bearing masonry or non-load bearing cold formed metal framing.
 - c. Interior walls will be non-bearing cold formed metal framing
4. Lateral Loads:
- a. The lateral load resisting system will consist of the roof and floor diaphragms that will transfer the horizontal wind and seismic loads to braced frames of steel in the vertical direction

Foundation System:

1. Slab-on-grade:
 - a. The new slabs on grade will consist of a 4" thick slab on grade reinforced with Welded Wire Reinforcing on vapor retarder and porous fill. This must be verified with the site-specific geotechnical report.
2. Foundations:
 - a. New footings are assumed to be shallow spread footings to match the adjacent existing structures. This must be verified by a site-specific geotechnical report.
 - b. Foundations supporting retaining wall will be designed as cantilevered walls.

04 Acoustical Design (Divisions 03 – 13) [Glavé & Holmes Architecture]

Criteria

Acoustic Design Criteria:

1. Assembly and Conference: NC 30 with a relatively low reverberation time and a reasonably balanced, but traditional spectrum.
2. Office: NC 35-40
3. Lobby and Prefunction: NC 40

Isolation

Partitions:

1. Assembly, Conference Room, Offices and Restrooms: 50 STC - 3 5/8" or 6" light gauge stud with 2 layers of 5/8" drywall on one side and 1 layer on the other side with insulation in the cavity.

2. Other Areas: 45 STC - 3 5/8" light gauge stud with a single layer of 5/8" drywall on each side and insulation in the cavity.

Doors:

1. Assembly, Conference Rooms, Offices: Gasketed Solid Core Doors
2. Other Areas: Ungasketed Solid Core Doors

Ceilings:

1. Assembly: 55-60 STC range – Perforated Wood Panel System (minimum 0.65 NRC rating with a minimum 35-39 CAC rating)
2. Prefunction: 55-60 STC range – Acoustical Plaster (minimum 0.6 NRC rating)
3. Conference and Office: 55-60 STC range - Mixture of acoustical tile (minimum 0.65 NRC rating with a minimum 35-39 CAC rating) and plaster/drywall

Floor Finish:

1. Assembly, Conference Room, Prefunction, and Offices – Carpet (to limit impact noise transfer and reverberation)

Mechanical System Noise Control

Main air handler unit should be selected for quiet operation which normally includes plenum or plug-type fans and ideally FanWall technology. Units should also include VFD drives. Where practical, the VAV boxes should be located in non-sensitive corridor or support areas and not located directly over sensitive space.

In general, air handling systems will likely require a minimum 20' of 2" sound-lined duct on the unit intake and discharge (or a 7' low-pressure attenuator) in addition to selection of a quiet unit as noted above. For most areas, large VAV boxes (over 1200 CFM) should incorporate a minimum 12' of 1" sound-lined duct on the discharge (or a 5' low-pressure attenuator) and will likely require an attenuator on the inlet of any fan-powered boxes. Smaller VAV boxes (1200 CFM or less) should incorporate a minimum 8' of 1" sound-lined duct on the box discharge (or a 3' low-pressure attenuator and inlet attenuator). For the board room, these guidelines should be upgraded with large VAV boxes (over 1200 CFM) incorporating a minimum 10' of 2" sound-lined duct on the discharge (or a 5' low-pressure attenuator) and will likely require an attenuator on the inlet of any fan-powered boxes. Smaller VAV boxes (1200 CFM or less) should incorporate a minimum 10' of 1" sound-lined duct on the box discharge (or a 3' low-pressure attenuator and inlet attenuator). As noted above, boxes over any sensitive space would benefit from field upgrades to control radiated noise.

Diffusers should be selected for at least 5 NC points lower than the design goal at normal operating conditions (less than NC 25 for the board room). Dampers should be remote from diffusers with lined duct or lined flex between the damper and the diffuser. The system should be air-balanced to minimize noise. This normally requires a rebalance after the initial balance. During the rebalance, the contractor

should further address fan RPM to minimize system static and adjust individual diffusers for the lowest noise possible within the practical tolerance allowed between diffusers.

All major vibrating equipment should be isolated from the building structure.

05 Interior Finishes (Division 09) [Glavé & Holmes Architecture]

Public Spaces

Lobby

Floors: Stained Wood
Base: Painted Wood
Walls: Painted GWB
Ceiling: Painted GWB
Remarks: Entrance Matt

Prefunction

Floors: Carpet
Base: Painted Wood, Stained Wood
Walls: Painted GWB, Stained Wood
Paneling
Ceiling: Acoustical Plaster
Remarks:

Assembly

Floors: Broadloom Carpet
Base: Painted Wood
Walls: Painted GWB
Ceiling: Sculptural Wood Ceiling
Remarks:

Conference Rooms

Floors: Broadloom Carpet
Base: Painted Wood
Walls: Painted GWB
Ceiling: 24"x24" APC (Tegular with Fine
Grid) / Painted GWB
Remarks:

Corridors

Floors: Stained Wood
Base: Painted Wood
Walls: Painted GWB
Ceiling: Painted GWB
Remarks:

Main Stair

Floors: Stained Wood
Base: Painted Wood
Walls: Painted GWB
Ceiling: Painted GWB
Remarks:

Public Restrooms

Floors: Porcelain Tile
Base: Porcelain Tile
Walls: Tile Wainscot / Painted GWB
Ceiling: Painted GWB
Remarks:

Stair

Floors: Rubber Integral Tread and Riser
Base: Painted Stringer
Walls: Painted GWB
Ceiling: 24"x24" APC (Tegular with Fine
Grid)
Remarks:

Staff Areas

Catering

Floors: Poured Epoxy
Base: Integral cove base

Offices

Floors: Broadloom Carpet
Base: Vinyl Base

Walls: GWB, High Build, Three Coat,
Semi-gloss Epoxy Paint System
Ceiling: 24"x24" APC (Tegular with Fine
Grid)
Remarks:

Walls: Painted GWB
Ceiling: 24"x24" APC (Tegular with Fine
Grid)
Remarks:

Support Areas

Storage

Floors: VCT
Base: Vinyl Base
Walls: Painted GWB
Ceiling: 24"x24" APC (Tegular with Fine
Grid)
Remarks:

Mechanical

Floors: Sealed/Painted Concrete
Base: None
Walls: Painted GWB
Ceiling: Painted Exposed Structure – Spray
Cellulose Acoustical Insulation
Remarks:

Janitor Closets

Floors: VCT
Base: Vinyl Base
Walls: Painted GWB
Ceiling: 24"x24" APC (Tegular with Fine
Grid)
Remarks:

Audio Visual / IT

Floors: Sealed/Painted Concrete
Base: None
Walls: Painted GWB
Ceiling: Painted Exposed Structure
Remarks:

06 Fire Suppression (Division 21) [Colonial Engineered Solutions]

21 0500 – Common Work Results for Fire Suppression

Install fire suppression system for complete building coverage in accordance with NFPA 13, Light / Ordinary hazard. Piping will be black steel with threaded, welded and/or mechanical couplings. All valves will be provided with integral tamper switches for connection to the fire alarm system.

21 0553 – Identification for Fire Suppression Piping

Plastic laminate nameplates for all equipment. Brass or plastic tags for all valves. Plastic markers or painted stencils for pipes. Plastic underground warning tape for underground piping. Ceiling tacks for equipment and valves located above suspended acoustical ceiling tiles.

21 1300 – Fire Suppression Systems

Sprinkler contractor will provide complete hydraulic calculations and shop drawings coordinated with ceiling plans prepared by NICET Level III designer or professional engineer. The 6" fire service line will have a post indicator valve. The main riser valve (with backflow preventer and OS&Y valves) will be located in the basement level of the building. All piping will be run concealed in finished spaces with ceilings. Piping will be exposed in spaces with exposed structure.

Sprinkler heads will be semi-recessed pendent type (white finish), quick response in all areas with finished ceilings. Standard pendent or upright heads with chrome finish will be used in spaces without finished ceilings (such as spaces with exposed structure ceilings, storage rooms, mechanical rooms, other service areas).

21 3000 – Fire Pumps

It is unknown at this time if a fire pump will be required. The latest water flow test from the Hixon Addition indicated 995 GPM flow rate with a residual pressure of 42 PSI. The facility will be a light hazard system and require approximately 250 gpm, including hose stream allowance. There is approximately 4 PSI safety factor available, based on current available information. A 6” fire water feed serves the Hixon and North Additions. This 6” line can be extended to the Meeting Pavilion.

Should a fire pump be required, it shall be a packaged fire pump and listed controller / transfer switch that is service entrance rated. It will need to be determined further how to interface with the electrical service for powering the fire pump along with emergency power supply.

Provide jockey pump and all required controls / accessories.

07 Plumbing (Division 22) [Colonial Engineered Solutions]

Plumbing Systems – General Summary

The plumbing systems required for the new Meeting Pavilion will serve restrooms and a catering kitchen. The restrooms include floor mounted water-closets and a wall or vanity mounted lavatory. The catering kitchen will include fixtures and equipment normally encountered in this application.

It is anticipated a 2-1/2” cold water line will be required serving this addition. There is an existing 2-1/2” CW service which serves the North Addition and The Hixon Addition. There is also a 4” CW service which serves the original building and library. The common line size required to serve the North Addition, Hixon Addition, and the Pavilion Addition is 3” for a combined service. The water line shall be increased in capacity from the street connection complete with a new meter.

22 0500 - Common Work Results for Plumbing

Work will be performed in accordance with the Virginia Uniform Statewide Building Code 2015 (IBC/IPC/IFGC 2015).

22 0519 - Meters and Gauges for Plumbing Piping

Pressure gauges (4.5-inch diameter) at domestic water service. Solar-powered thermometer at hot water discharge piping from domestic water heater.

22 0553 - Identification for Plumbing Piping and Equipment

Plastic laminate nameplates for all plumbing equipment. Plastic laminate or brass tags for all valves. Plastic markers for pipes. Ceiling tacks for valves and equipment located above suspended acoustical ceiling tiles.

22 0719 - Plumbing Piping Insulation

Rigid fiberglass pipe insulation with all-service jacket will be used for interior domestic cold / hot water and storm drain piping. PVC fitting covers.

22 1005 - Plumbing Piping

Sanitary waste / vent piping will be Schedule 40 PVC or cast-iron no-hub below grade and cast-iron no-hub above grade.

Below grade domestic cold / hot water piping will be Type M copper or cement lined ductile iron. Above grade domestic cold / hot water piping will be Type L copper. Interior storm drain piping will be cast iron in all above-grade locations, and cast iron or Schedule 40 PVC underground.

22 1006 - Plumbing Piping Specialties

The 3” Domestic cold water service will enter the building through an RPZ backflow preventer. Spool piece prior to RPZ for future pressure reducing valve (if needed) and pressure gauge at main domestic water service.

Self-powered digital thermometers will be installed at main supply piping from domestic water heater. Roof drains will be cast iron body with sump and polyethylene dome. Secondary roof drainage shall be provided by internal drains and routed to discharge 24” above grade. Downspout nozzles (overflow drain outlets) will be nickel bronze, round with curved outlet

Floor drains will be lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer. Floor drains (cast brass, round strainers) will be provided in mechanical rooms, janitors' closets, all holding areas, and public restrooms. Floor drains with heavy-duty strainers will be provided in the. Trap guard devices will be used to prevent evaporation in the floor drains. Cleanouts will be round cast nickel bronze access frame and non-skid cover.

Exterior hydrants will be freeze resistant, self-draining type with bronze wall plate hose thread spout, lock shield and removable key, and integral vacuum breaker. Mixing wall hydrants (recessed with locking cover) will be provided in each gang toilet room for cleaning purposes. Recessed galvanized box and quarter-turn valves will be provided for ice machine and refrigerator ice maker supplies. Water hammer arrestors will be provided in water supply branch piping to flush valve fixtures.

Sump pump with “oil minder” control will be installed in each elevator hoistway.

22 3000 - Plumbing Equipment

Electric, storage domestic water heaters, complete with diaphragm type expansion tank, will be located in the mechanical room. One system will provide hot water to the and provide domestic hot water for the entire building.

Either a pumped recirculating hot water system or self-regulating electric pipe heat trace will be used for temperature maintenance of domestic hot water supply piping.

Empirical data from past projects indicate only 45 PSI water pressure at the street. 35 PSI is required at flush valves and 15 PSI pressure drop is allowed for backflow preventors. A pressure boosting system will be

required for the main water supply system for the building. The pressure boosting system will be packaged with two pumps, factory assembled, tested, and adjusted; shipped to site as integral unit; consisting of pumps, valves, and galvanized piping, with control panel assembled on fabricated steel base with structural steel framework. Controls and instruments will be housed in a NEMA 250 Type 1 general purpose enclosure with main disconnect interlocked with door, fused circuit for each motor, magnetic starters with three overloads, control circuit transformer with fuse protection, selector switch for each pump, low limit pressure switch, low pressure alarm light, running lights, current sensing devices, minimum run timers, manual alternation, and suction and discharge pressure gages. Each pump outlet combination pressure reducing and check valve to maintain constant system pressure. Provide gate or butterfly valves on suction and discharge of each pump. Provide check valve on each pump discharge.

22 4000 - Plumbing Fixtures

Plumbing fixtures will be water-conserving type. American Standard, Kohler, Sloan, Zurn, Moen, Elkay, used as basis for design in most cases.

- Water closets will be floor mounted, vitreous china, auto sensor-operated valves and open front seat without cover.
- Urinals will be vitreous china, wall mounted with floor carrier, with sensor-operated flush valve (1/8 gpf).
- Lavatories will be vitreous china, counter mounted, with grid strainers and automatic sensor faucets. Lavatory faucets will be equipped with 0.5 GPM low-flow aerators.
- Service sinks will be floor-mounted, molded stone, 24x24-inch, with 5-foot rubber hoses, mop hangers, and wall mounted faucets (wall brace, pail hook, vacuum breaker and lever handles).
- Sinks will be stainless steel with gooseneck swing spout.
- Electric water coolers will be dual-height, with stainless steel bowls and recessed compressor compartments.

08 Mechanical (Division 23) [Colonial Engineered Solutions]

HVAC System - General Summary

The building heating, ventilating and air conditioning (HVAC) system is generally described as 4-pipe heating water / chilled water (HW/CHW) with air distribution via air handler unit(s) with HW/CHW coils and air terminal units with HW coils. A preliminary load calculation was performed based on the presented floor plans. The estimated loads are 75 tons cooling, and 600 MBH heating requirement.

The major components of the system will include a 10,000 cfm custom roof-mounted chilled water air handler with service vestibule for maintenance access, which will serve the Assembly Area and Pre-Function spaces.

The General use central air handling system shall be located in the mechanical room. The 5,000 cfm variable air volume system shall serve the office spaces, complete with HW air terminal units. The intake and exhaust for the air handling system shall be provided by intake and exhaust hoods located on the roof level.

A third blower coil or fan coil unit (1,000 cfm) will provide recirculated cooling airflow to the Catering Kitchen. Ventilation air will be provided from the general use VAV system.

The rear stairwell will be heated with either electric wall heaters or hot water heaters/radiators.

The HVAC systems will be controlled by a building automation system (BAS), with full capabilities of scheduling, controlling, monitoring, and alarming for the system. The system shall be an extension of the existing Siemens system.

The heating and cooling source will be a central utility plant, part of the Law School, which is currently under design. There are existing chilled (4") and hot water (3") utilities which serve the North Addition. These will be required to be increased in size to 6" chilled water and 4" hot water. This also accommodates a future project which at the Law School which converts the entire building to hydronic cooling and heating.

23 0500 - Common Work Results for HVAC

Work will be performed in accordance with the Virginia Uniform Statewide Building Code 2015 (IBC/IMC 2015).

23 0513 - Common Motor Requirements for HVAC Equipment

Motors for HVAC equipment will be premium efficiency.

23 0519 - Meters and Gauges for HVAC Piping

Pressure gauges (4.5-inch diameter) at suction / discharge of all pumps. Solar-powered digital thermometers at geothermal supply / return.

23 0548 - Vibration and Seismic Controls for HVAC Piping and Equipment

Spring-and-neoprene hangers for suspended equipment. Braided flexible piping connectors for pumps and air moving equipment. Concrete inertia bases for base-mounted pumps.

Threaded rods for suspended equipment and piping. Trapeze hangers for grouped piping. Concrete pads for all equipment located in mechanical rooms. Insulated roof curbs for all roof mounted equipment.

23 0553 - Identification for HVAC Piping and Equipment

Plastic laminate nameplates for all HVAC equipment. Plastic laminate or brass tags for all valves. Plastic markers for pipes. Stenciled identification for all ducts. Plastic underground warning tape for underground piping. Ceiling tacks for equipment located above suspended acoustical ceiling tiles.

23 0593 - Testing, Adjusting and Balancing for HVAC

Provide complete testing, adjusting and balancing (TAB) of HVAC systems. The TAB team shall consist of the air and water testing sub-contractor, BAS Contractor, equipment manufacturers' representatives, and the Owner's representative. Provide pre-TAB checklist and complete air / water balancing reports.

23 0713 - Duct Insulation

Flexible fiberglass blanket insulation will be used for supply and outdoor air intake ducts, and ducts located in unconditioned spaces.

2” acoustical duct liner will be provided in lieu of insulation for 20’ of supply/ return ductwork to/from the air handler, and downstream of air terminal units serving the courtroom spaces.

Rigid fiberglass ductwork with rubber membrane jacket will be used for exterior ducts. Exterior ducting will be avoided.

23 0719 - HVAC Piping Insulation

Rigid fiberglass pipe insulation with all-service jacket will be used for interior building distribution piping. Elastomeric cellular foam insulation for condensate drain piping. Exterior chilled water piping will be insulated similarly and will have aluminum jacket and electric heat trace.

23 0923 - Direct Digital Control System for HVAC

The building HVAC systems will be controlled by a DDC building automation system (BAS) with the main panel located in the mechanical room, and with full capabilities of scheduling, controlling, monitoring and alarming for the system.

Thermostats, humidistats, temperature sensors, pressure sensors, current sensors, control valves, and automatic dampers with operators shall interface and be compatible with the BAS. Electronic controls will be programmable and provide for temperature control, humidity control, occupied / unoccupied scheduling, etc. Control valves at terminal units will be 2-way, electric.

Line voltage thermostats will control propeller exhaust fans and unit heaters.

23 0993 – Sequence of Operations for HVAC Controls

Sequences of control will be included on the drawings.

23 2113 - Hydronic Piping

Interior CHW/HW distribution piping will be Schedule 40 welded black steel (diameters greater than 2-inches), and Schedule 40 threaded black steel or soldered copper (2-inch diameter and smaller). Type L copper for equipment drains and overflows. Provide flanges or unions and isolation valves at all connections to equipment.

23 2114 - Hydronic Specialties

Expansion tanks will be diaphragm type. Air vents will be manual type. Air separators will be in-line type.

Piping packages at each air handler, blower coil, fan coil, and air terminal unit will include manual circuit setting valve, strainer, unions, P/T ports and ball isolation valves.

Butterfly isolation valves and strainers will be provided at main CHW/ HW pumps. Pressure ports will be used for reading pressure and setting flow. All pumps will have a VFD which will be used for balancing.

23 3100 - HVAC Ducts and Casings

In general, supply, return, intake and exhaust ducts will be galvanized steel rated for 2-inch pressure class. Flexible ducts with helical wire support, fiberglass insulation and outer vapor barrier will be used for connections to supply diffusers (5-ft maximum length).

23 3300 - Air Duct Accessories

Turning vanes in all rectangular elbows. Manual volume dampers at all branch duct take-offs from mains.

23 3423 - HVAC Power Ventilators

Inline fans will be used for mechanical room and equipment room exhaust. Ceiling and roof fans will be used for consolidated bathroom exhaust.

23 3600 – Air Terminal Units

Single duct variable volume terminal units, complete with HW coil, will provide for regulation and control of conditioned air to occupied spaces. Unit control shall be integrated with BAS and wall or ceiling occupancy / vacancy sensors.

23 3700 - Air Outlets and Inlets

Supply air devices will have integral volume dampers. Ceiling diffusers will be extruded aluminum. Sidewall supply grilles will be double deflection type. Slot diffusers will be linear type. Return grilles will be stationary blades, 3/4-inch deep on 3/4-inch spacing. Louvers will be extruded aluminum, stormproof and drainable, and have painted factory finish. Titus or Kreuger used as Basis of Design.

23 4000 - Air Cleaning Devices

Combination 2-inch MERV 8 pleated media pre-filters and 12" MERV 14 Cartridge filters will be used in all air handling units.

23 7413 – Air Handling Units

Units designed for indoor or outdoor installation, as needed. Draw-thru type air handling units with fans, total enthalpy energy recovery section, CHW/HW coils, filter and mixing sections. Factory assembled, internally wired, and 100% run tested to check operation, fan and blower rotation and control sequence before leaving the factory. Wiring internal to the unit shall be numbered for simplified identification. Units shall be ETL listed and labeled.

23 8100 – Terminal Heating and Cooling Units

Terminal heating and cooling units will have CHW/HW coils as appropriate. Belt-driven blower coil units, nominal ratings of 1 to 10 tons. Horizontal concealed type fan coils.

Hydronic and electric unit heaters for tempering stairwells and mechanical rooms.

23 8126 – Small Split System Heating and Cooling

Redundant ductless mini-split systems shall serve main AV room.

09 Electrical (Division 26) [Colonial Engineered Solutions]

Electrical Power Distribution System Extension– Summary of Approach to Extension of Power (Normal and Emergency) to Pavilion

Power shall be extended to the Pavilion from the Law School main switchboard in the existing main mechanical/electrical room on the south side of the building. The existing main switchboard is a Square D QED Power Style Switchboard, 277/480V, 3-phase, 2500 amp and was installed as part of the renovation and addition to the south side of the Law School building in 2007. It is a three-section board with CT section, 2500 amp main breaker section, and double-line distribution section. The drawings for the last major facility addition constructed in 2016 indicates that at the completion of that project, the load on the switchboard was expected to be approximately 1033 kVA (1242 amps). So the switchboard appears to have ample spare ampacity for the additional load from the Pavilion. The architecture of the double-line distribution section is such that circuit breakers up to 250 amps can be installed in the right side of the section and breakers over 250 amps must be installed on the left side. The right side appears to have some available spaces for adding new circuit breakers. But the left side is completely full. It currently has six (6) 300 amp breakers, one (1) 400 amp breaker, and one (1) 1000 amp breaker. The 1000 amp supplies the backfeed to the original building switchboard and the others all supply panelboards or HVAC equipment. All of the 300 and 400 amp breakers are Square D MJ frame.

The electrical load for the Pavilion is estimated to be in the range of 170-190 kVA (205-230 amps at 480V) with approximately 120-130 kVA being 277/480V loads from lighting, HVAC, electric water heating, and the elevator, and the remaining 50-60 kVA being 120/208V loads from receptacles, appliances, theatrical lighting, small HVAC equipment, and other miscellaneous 120/208V loads. One 277/480V panelboard, which would essentially serve as the main panelboard for the Pavilion, would be required to supply the Pavilion lighting, HVAC, water heating, and elevator. That panel would also feed a new 75 kVA transformer that would in turn supply one or two 120/208V branch panelboards for the Pavilion. Based on the estimated load, the 277/480V panelboard would be 400 amp and it would be supplied with a full 400 amp feeder to allow for future loads or expansion. However as described above, the switchboard does not currently have space on the left side to install a new circuit breaker of that size. Space will need to be created. Since the circuit breakers are all MJ frame and MJ frame breakers range from 300-800 amps with no difference in physical size, two (2) of the 300 amp breakers can be removed and replaced with a 600 amp and a 400 amp. The 400 amp would be used to serve the Pavilion. The 600 amp would serve the loads on the two circuit breakers that were removed by feeding over to two (2) 300 amp enclosed breakers mounted on the wall in the main building mechanical/electrical room. The feeders for the two (2) loads currently supplied by the 300 amp breakers removed from the switchboard would be rerouted to the two (2) new 300 amp wall-mounted enclosed breakers.

Where it is located in relation to the main mechanical/electrical room, the feeder between the existing switchboard and the Pavilion will need to be routed underground outside of the building, similar to how the power feeders for the two previous additions in 2000 and 2016 on the north and east side of the Law School were run. In fact, those existing feeders to the 2000 and 2016 additions are routed along the east side of the building very close to where the Pavilion is currently sited. As the project moves into preliminary design, the

exact location of those existing feeders will need to be surveyed and marked. The work for the Pavilion should avoid disturbing them if at all possible as doing so would be costly.

Emergency power required for the Pavilion should be limited to one or two circuits for emergency lighting and would be extended from the existing emergency power distribution system supplied by the existing generator and automatic transfer switch. There are two possible locations from where to extend emergency power to the Pavilion. Each location has both 277/480V and 120/208V emergency panelboards that appear to have the spare capacity and spare circuits to provide the emergency circuitry needed. The first is the main building electrical/mechanical room where the main switchboard is installed. The second is the 2000 addition basement mechanical/electrical room where the data and security for the Pavilion may need to be extended to in order to tie those into the existing systems. It appears the 2000 addition mech/elec room may be a bit closer to the Pavilion so that may be the better choice.

26 0500 - Common Work Results for Electrical

The electrical systems shall comply with the 2018 Virginia Uniform Statewide Building Code, the Virginia Energy Conservation Code 2018 (VECC), the National Electrical Code 2017 (NEC), the Americans with Disabilities Act Accessibility Guidelines (ADAAG), and William and Mary (W&M) Facilities Management Design and Construction Manual as well as W&M Technical Standards.

26 0519 - Low-Voltage Electrical Power Conductors and Cables

Branch circuit wiring shall be Type THHN/THWN copper wire installed in conduit. Underground wiring for the feeder between the existing building main switchboard and the electrical equipment at the Pavilion shall be XHHW-2.

26 0526 - Grounding and Bonding for Electrical Systems

Provide separate, insulated grounding conductor within each feeder and branch circuit raceway. Provide a grounding bus bar at the Pavilion telecom headend location. The new transformer at the Pavilion shall be grounded as required for separately derived systems in the NEC.

26 0533 – Raceway and Boxes for Electrical Systems

Conduit shall be either rigid metal heavywall (RGS), intermediate metal conduit (IMC), or electric metallic tubing (EMT). PVC conduit shall only be used for underground installations outside the perimeter of the building or under the concrete floor slab. Flexible metal conduit shall be used for all flexible connections, plus all short motor connections, transformer connections, and all equipment subject to movement or vibration. Liquidtight flexible metal conduit shall be used in exterior locations and in all interior wet or damp locations. Flexible metal conduit shall be permitted for use as the connection to recessed lighting fixtures, maximum length of 6', and installed in accordance with all NEC requirements. All boxes including outlet boxes and floor boxes shall be sheradized or galvanized sheet steel code gauge boxes. Floor boxes on grade shall be cast iron with outlets as required. Multi-service recessed boxes is preferred for protection of outlets and cord management.

26 0534 – Pathways for Communications Systems

Provide infrastructure to support the installation of Division 27 low voltage communications systems such as data/telephone, television signal distribution, audio-video distribution system, etc. Infrastructure shall consist of the installation of empty boxes for outlets or devices with empty conduit with pull strings stubbed from each box to above an accessible ceiling or directly to the designated I.T. room or headend location where appropriate. The work shall include any conduit sleeves above inaccessible ceilings to create a complete pathway for cabling back to the I.T. room. Infrastructure shall also include 120V circuitry needed for systems equipment, as well as all associated grounding, bonding, etc. Minimum conduit size for data outlets shall be 1". An underground conduit will also be provided to connect the Pavilion I.T. room/headend location back to the rest of the Law School facility. The existing mobile trailer that will be removed to make room for the construction of the Pavilion is currently provided with an I.T. closet that connects back to the mechanical/electrical room in the basement of the 2000 addition on the east side of the building via an underground conduit. It is anticipated that this conduit could be reworked and extended to the I.T. headend in the Pavilion.

26 0535 – Pathways for Electronic Safety and Security Systems

Provide infrastructure to support the installation of Division 28 electronic safety and security systems such as fire alarm, access control, and other required safety and security systems. Infrastructure shall consist of the installation of empty boxes for outlets or devices with empty conduit with pull strings stubbed from each box to above an accessible ceiling or directly to the I.T. closet or system headend location where appropriate. It shall include any conduit sleeves above inaccessible ceilings to create a complete pathway for cabling back to the I.T. room or headend equipment. Infrastructure shall also include 120V circuitry needed for systems equipment such as access control system door control boxes located above accessible ceilings, as well as all associated grounding, bonding, etc. Minimum conduit size for security shall be 3/4" with larger conduits where required or directed by the security system designer/installer. A complete conduit system shall be provided for all fire alarm system wiring. Underground conduits will be provided for each type of safety and security system to allow for the extension of each such system from the existing Law School building to the Pavilion. Exact location where these conduits connect to the existing building will be determined during the preliminary design phase, but the most likely location is the basement mechanical/electrical room that is part of the 2000 east building addition.

26 0553 - Identification for Electrical Systems

Provide plastic laminate nameplates for all disconnect switches, starters, panelboards, and similar equipment. Provide typed directories in panelboards. Circuits shall be identified on the cover plates of all junction and outlet boxes.

26 0923 – Lighting Control Devices

Provide switches, dimmers, faceplates, occupancy and vacancy sensors, and other manual and automated lighting controls in spaces not connected to the Section 26 0924 Lighting Control System as required to meet VECC. Most spaces shall have a combination of manual and automated controls. Switches shall be heavy duty specification grade, 120/277V, single-pole, 3-way, 4-way, etc. as required. Wall dimmers shall be slide type. Occupancy and vacancy sensors shall be dual-technology type with adjustable time delay. Wallplates

and device finishes shall match devices in the existing Law School building or shall be as directed by the Architect.

26 0924 – Lighting Control System

Considering its size and its separation from the rest of the Law School building, the Pavilion shall be provided with its own complete programmable lighting control system. The lighting control system shall have all capabilities necessary for compliance with all VECC requirements as well as the College's desired functionality in each space. It shall consist of a combination of manual and automated controls. Manual stations will provide for full dimming in most areas and multiple stations will be provided to allow for separate control of groups of lights on a fixture type or zoned based in larger spaces such as Assembly and Prefunction. Automated controls will consist primarily of occupancy sensors, vacancy sensors, and daylight sensors where required or desired. The system shall be capable of controlling multiple types of dimming protocols, (0-10V, electronic low voltage, forward phase, etc.). The system shall be capable of creating schedules and controlling zones of lights on a schedule basis. The system will also be capable of bypassing controls and bringing on designated emergency fixtures to full power on loss of the normal lighting circuit. The particular system that will be used as the Basis of Design will be selected during the preliminary design phase in collaboration with W&M staff.

26 2200 – Low-Voltage Transformers

Low-voltage transformers shall be dry-type, 3-phase, 480V-120/208V in ventilated sheet metal type enclosure with louvers, copper windings, 150 degree temperature rise, and of a low noise design meeting NEMA ST20 sound levels. Square D shall be used as the Basis of Design.

26 2416 - Panelboards

Panelboards shall have copper plated bus including neutral and ground bus, shall be housed in code gauge steel cabinets with hinged trim, and shall be supplied with thermal magnetic molded case circuit breakers or electronic trip circuit breakers where such is needed. Panelboards shall be fully rated or shall be series rated with the upstream circuit breaker supplying them in order to maintain the interrupting rating of the existing system. Square D shall be used as the Basis of Design.

26 2726 - Receptacles

Receptacles for general use will be heavy-duty specification grade 3-wire grounding type, 20A at 125 volts, NEMA 5-20R, with other NEMA types, ground-fault circuit interrupter (GFCI) types, etc. provided where required by the application. Finish of receptacles and wallplates shall match devices in the existing Law School building or shall be as directed by the Architect.

26 2813 - Fuses

Provide fuses in all fused disconnect switches and combination starters. Fuses to be rejection type C, class RK1, dual element, time delay, current limiting.

26 2816 - Enclosed Switches

Enclosed switches shall be heavy duty in NEMA 1 or 3R enclosures as required, fusible for rejection type fuses, with solid neutral assembly and equipment grounding kit. Square D shall be used as Basis of Design.

26 2900 – Low-Voltage Controllers

Manual motor starters and magnetic combination starters shall be provided for mechanical and plumbing equipment where required. Starters shall be provided with thermal overloads, L.E.D. indicating lights, start-stop buttons, hand-off-auto switches, phase-protection relays, etc. as required by control diagrams. Starters shall have oversized enclosures. Square D shall be used as Basis of Design.

26 5000 - Lighting

Lighting shall be LED to the extent possible. Individual lighting fixtures shall be selected in collaboration with the Architect and will be appropriate for both the function and character of each space. Potential styles of lighting fixtures anticipated to be used are recessed 2'x2' high efficiency troffers, downlights, pendants, wall sconces, vanity lights in toilet rooms, and other types of decorative or specialty fixtures as dictated by the type of space and type of ceiling. It is anticipated that some level of theatrical style lighting will be provided in the Assembly space for the stage area; the exact nature of the theatrical lighting will be determined during preliminary design with the Architect, Owner's representatives, and A/V system consultants. Drivers for LED fixtures shall be electronic and meet the requirements of NEMA-410. Exit signs and emergency lighting will be provided where required. Exit signs will be LED type and shall match the appearance of other emergency lights used at the Law School. Emergency lighting will be via the normal lighting fixtures serving the space connected to an emergency circuit.

Exterior lighting shall be provided as required and is expected to consist of both building-mounted fixtures and pole lights. Building-mounted lights could range from recessed downlights in canopies, to pendant lights, to wall sconces, to façade lighting as appropriate. Exterior lighting fixtures will be selected in collaboration with the Architect and shall coordinate with the appearance of existing exterior lighting fixtures in use at the Law School. Exterior lighting at locations of exit discharge and along any other required paths of egress to the public way will be connected to emergency circuits.

Lighting levels shall be in accordance with or greater than recommended levels by IES:

<u>Space</u>	<u>Footcandles</u>
Assembly	40-50
Prefunction	20-30
Offices	40-50
Conference	30-40
Toilets	15-20
Mech/Elec	20-30
Corridors & Stairways	15-20
Exterior Entrances	5-10
Exterior Walkways	2

10 Audio-Visual (Division 27) [Glavé & Holmes Architecture]

General Description:

1. Audiovisual systems will be provided for both assembly and conference rooms.
2. Audiovisual systems will be designed to utilize a digital signal distribution system compatible with video signals standards including HDMI, DVI, DisplayPort, and Thunderbolt.
3. Video displays will be sized per Infocomm standards (AV trade association) for viewing of text.
4. A centrally located equipment rack located in the A/V closet will be provided to house all of the AV switching, control, and signal distribution equipment.

Conference

1. Video System
 - a. The conference room will be provided with a simple video system including a wall mounted flat panel display with integral speakers. The remote control provided with the display will be used to control the display power, source selection, and volume control.
 - b. Inputs to the display will include an HDMI and VGA input with analog audio at the conference table and a wall plate with HDMI inputs located next to the display.
 - c. A LAN / Network port will be provided next to the flat panel display to allow for video conferencing.
2. Audio System
 - a. Ceiling speakers will be provided for playback of audio from video sources.

Assembly

1. Video System
 - a. The main video display for board room will consist of two ceiling recessed, electric projection screen (tensioned, with gray projection surface for high contrast images) and an associated ceiling-lift mounted video projectors. The projection screen will be located in a ceiling soffit on the stage side of the assembly. The video projector lift will conceal the projectors above the ceiling when not in use.
 - b. The video input location on the south wall and will be provided with a compact interface including HDMI input (which is compatible with the DVI, Display Port, and Thunderbolt digital video formats), VGA analog video input, and analog audio input.
2. Audio System
 - a. Ceiling speakers.
 - b. Gooseneck microphone with desk stand and mute switches will be provided at the lectern.
3. Control System
 - a. A central control system, with touch panel controllers, will be provided for simplified and centralized control of the audiovisual system at lectern.

11 Electronic Safety and Security (Division 28) [Colonial Engineered Solutions]

28 3100 – Fire Detection and Alarm

The existing Law School fire alarm system shall be extended to the Pavilion. The existing system is a Simplex 4011ES system with main panel located just outside the main mechanical/electrical room for the entire facility. A new panel/transponder will be installed in the Pavilion and tied-in to the nearest fire alarm panel in the existing facility. Fire alarm devices including initiating devices (pull stations, smoke detectors, duct detectors, etc.), and notification devices (horn-strobes and strobe only) will be provided where required throughout the Pavilion and connected to the new panel/transponder.

12 Civil and Sitework Systems (Divisions 31 – 35) [Draper Aden Associates]

Site Location

The proposed site area is in a previously undeveloped area on the east side of the Marshall-Wythe Law School building. The new Pavilion project site is adjacent to the Law School building on the west and south, National Center for State Courts to the north and overlooks the Colonial Parkway to the east.

a. Topography

A Topographic Survey of the project site was completed by Draper Aden Associates in September, 2013. Topographic relief on the site is severe and the site and project area is generally sloping to the north, east and south. The high point is approximately elevation 79. An approximate finish floor elevation of approximately 83 is proposed. It is expected that cut and haul will occur to remove the excess material and soil from the site. New retaining walls will be located along the limits of the proposed development.

b. Access and Parking

The new building will generally be accessed from the north for vehicular access and from the west for pedestrian access. A new driveway will be proposed that will interconnect with the parking area and driveways at the National Center for State Courts.

This service drive will be necessary in order to maintain fire, emergency, and W&M Facilities Management (FM) access to the new and existing facilities. Given the topography and site constraints, it is recommended a meeting be held with the Williamsburg Fire Department to discuss fire and emergency access to the site.

The project site is located on a gravel area that is generally used for parking. Three (3) new parking will be provided for W&M FM staff for access to the new building.

c. Construction Traffic

Similar to when the addition to the Law School was completed in 2013/14, a construction entrance from the driveways and parking areas from the State Courts property area will be utilized to access the site. It is anticipated the contractor will surround the site with a construction fence along with other erosion control measures to protect the site and surrounding areas.

d. Utilities

Draper Aden Associates has reviewed available drawings provided by the College, the previously completed survey, and other available mapping, and field visits to ascertain the extent and physical locations of utilities present in the footprint of the proposed building site. Electrical power (primary and secondary), communications, natural gas services, hot water/chilled water (HW/CW) although shown on the previous survey, are not fully evaluated in this narrative as they are considered outside our scope of work and expertise; however, coordination between disciplines is further required as part of the site design to determine the extent of impact or possible relocation in order to construct the proposed pavilion. It is known that these utilities are currently serving the adjacent buildings and may be impacted by the new building.

i. Domestic Water

A new water service is needed for the new Pavilion. It is underdetermined if the new building can be serviced from the existing domestic water system in the law school building, or if the proposed facility will be served from the existing waterline to the north of the project site. A new domestic waterline will be extended to provide water service from either the existing building, or the 6" waterline to the north. New sub-metering and backflow prevention devices will also be located within a mechanical room and no new exterior vaults are anticipated.

ii. Fire Protection

There is currently a hydrant located to the north of the new pavilion project site. It is recommended to meet with the Williamsburg Fire Department to discuss fire protection and fire apparatus access to the project site. It is anticipated a new hydrant and fire department connection (FDC) will be located on the northern side of the building/site along the new access and service drive.

iii. Sanitary Sewer

A new sanitary sewer line from the new pavilion will be needed to convey the sanitary sewage from the facility to the public sewer system. Existing sewer lines are located on the north and west sides of the existing building facilities. Due to the proposed project location, it is anticipated a new pump station and forcemain will be required. It is anticipated the new forcemain will be directed to the north to connect to the 4-inch sewer system that was modified as part of the northern building addition in 2014. This route will also avoid the need to disturb the existing parking and driveways on the west side of the law school where other sewer lines are located. The new pump station and forcemain will be based on the new fixture counts and flows from the new pavilion. Depending on the flows, upgrade of the existing 4-inch sewer system may be necessary to discharge the sewer flows to the City's sewer system in Henry St.

e. Stormwater Management

Stormwater runoff from streets, lawns, parking lots, construction sites, industrial facilities and other impervious surfaces occurs as a result of precipitation events (for example,

rainwater or melted snow). The stormwater runoff may enter surface waters directly or through natural and constructed channel systems. Activities occurring in developed and urban areas contaminate stormwater runoff with pollutants such as automobile oil, grease, metals, sediment, bacteria from animal waste, nutrients and pesticides, as well as deposits from airborne pollutants. Unmanaged stormwater can cause erosion and flooding. It also can carry excess nutrients, sediment and other contaminants into rivers and streams. Properly managed stormwater can recharge groundwater and protect land and streams from erosion, flooding and pollutants.

DEQ is the lead agency for developing and implementing statewide stormwater management and nonpoint source pollution control programs to protect the Commonwealth's water quality and quantity. Currently, three laws apply to land disturbance activity in Virginia: the Stormwater Management Act, Erosion and Sediment Control Law, and Chesapeake Bay Preservation Act.

i. Erosion & Sediment Control:

The College of William & Mary's Facilities Management implements its own Erosion and Sediment Control (ESC) Program overseen by the Virginia Department of Environmental Quality and according to the Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations. The ESC Program's goal is to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources. The regulations specify "Minimum Standards," which include criteria, techniques and policies that must be followed on all regulated activities. These statutes delineate the rights and responsibilities of governments, and entities such as the College, that administer an ESC program and those of property owners who must comply.

The use of silt fence, inlet protection, dust control and a construction entrance are typically used in accordance with the Virginia Erosion & Sediment Control Program and the College of William and Mary. Additional measures including sediment traps, diversion dikes, reinforced silt fence, straw bales, and other measures are utilized in situations that require additional erosion control measures to protect the surrounding properties. While the design is not yet completed and due to the slopes of the project site, it is anticipated additional measures will be employed as part of this project.

ii. Stormwater Design and Review:

The Virginia Stormwater Management Program seeks to protect properties and aquatic resources from damages caused by increased volume, frequency and peak rate of stormwater runoff. Further, the program seeks to protect those resources from increased nonpoint source pollution carried by stormwater runoff. Stormwater management strategies and design calculations will be reviewed by the College of William and Mary prior to submission to DEQ for review by the Tidewater Regional Office.

1. Quality of Stormwater Runoff – DEQ oversees regulated activities undertaken on state and federal property, while localities (counties, cities, towns) have the option to establish a local SWM program to regulate these same activities on private property in their jurisdiction. Specifically, land development and land use conversion activities must prepare and seek approval of a SWM plan that describes all SWM controls to be used to control the quantity and quality of stormwater runoff from the activity. The pervious and impervious surfaces in the urbanizing landscape collect pollutants. Rainfall washes these surfaces so that the initial flush of runoff can carry high concentrations of the pollutants to nearby drinking water supplies, waterways, and properties.

The proposed Law School Pavilion is located on the east side of the existing Law School building. The site is also located at the top of slopes to the north, east and south. The project will increase the total impervious area of the project site. The project area currently drains to the north, east and south and there are currently no BMPs capturing runoff from this area. The College has recently updated their stormwater master plan. This plan was submitted to DEQ for approval re-establishing the 'checkbook' for water quality credits for proposed projects and increases in impervious areas. Quality compliance for the proposed Law School Pavilion is anticipated to be met through the College's established system of banked credits as verified by DEQ on October 6, 2016.

2. Quantity of Stormwater Runoff - Pervious surfaces, such as meadows and woodlands, absorb and infiltrate rainfall, therefore generate little stormwater runoff. Urban landscape typically covers such areas with impervious surfaces, such as pavement and rooftops. These surfaces generate runoff every time it rains. A typical city block generates nine times more runoff than a woodland area of the same size. The quantity of runoff from these areas quickly overwhelms natural channels and streams, often causing channel erosion, localized flooding and property damage. Channel protection and flood protection shall be addressed in accordance with the minimum standards set out in section 9VAC25-870-66, Water Quantity. Protection of the downstream slopes will also be done to prevent erosion from occurring due to the increased and concentrated flows and runoff from the new project development.

Environmental Impacts

- a. Steep Slopes

The project site is located at the top of the slopes in the rear of the law school site. The site slopes to the north, south and east toward the Colonial Parkway. As construction is completed, care and attention must be made to protect the slopes below the project site and avoid runoff and erosion from occurring.

b. Environmental Impact Report

An Environmental Impact Report (EIR) is required to satisfy the requirements given in Virginia Code § 10.1-1188, which requires state agencies to prepare and submit such a report for each major state project if it costs \$500,000 or more and includes one of the following activities: the acquisition or purchase of land or rights thereto, for state facility construction, construction of a facility, or new construction of a facility. Specifically, the EIR will address a variety of environmental issues in the context of the proposed project (as specified in Virginia Code § 10.1-1188) such as the environmental impacts of the project, adverse effects that cannot be avoided if the project is undertaken, measures proposed to minimize the impact of the project, alternatives to the proposed project, irreversible environmental changes that would result from completion of the project. The EIR has been submitted to DEQ for review and comments. DEQ will distributed the document to other state agencies for review and comment and will collect the responses from the other state agencies and submitted their recommendation of approval to the Secretary of Administration.

c. Resource Protection Area (RPA)

There are no known RPA areas on the project site. If any RPA areas are determined to exist, any impacts will be coordinated with DEQ.