

### Falls Church City Public Schools – Facility Evaluations

At the outset of this study, an evaluation was made of the existing infrastructure comprising the Falls Church City Public School System. This infrastructure includes four buildings:

- George Mason High School
- Mary Ellen Henderson Middle School
- Mount Daniel Elementary School
- Thomas Jefferson Elementary School

Each facility was toured by professionals from various disciplines – mechanical, electrical, and plumbing engineers, architects, civil engineers, and Hazardous Materials assessment and abatement specialists. The goal of these evaluations was to determine in a broad sense the condition of each facility, its compliance with current code, and its prospect for continued long term use. If any major issues were detected during these evaluations, they were documented for further consideration and evaluation as part of the master planning process.

The subsequent sections discuss each facility in turn, with sub-sections for the various disciplines' evaluations.

#### Site Assessment – Notes on Approach

Site assessments were completed for the three sites that house the schools. These sites are the following:

- George Mason High School and Mary Ellen Henderson Middle School
- Mount Daniel Elementary School
- Thomas Jefferson Elementary School

The site evaluation includes a review of the site, a discussion of zoning requirements for the site in question, a discussion of the site's role within the Fairfax County Comprehensive Plan, a discussion of site utilities, and a review of environmental features that affect the usable area of the site.

Site maps and graphics are included in the Appendix.

#### Hazardous Materials Assessment – Notes on Approach

F&R conducted the field portion of the hazardous materials survey at facilities from July 28 through August 8, 2008. The scope of work included inspection and sampling for ACM, LBP and visual identification of suspect PCB/mercury containing equipment. The inspection was completed by Alan Lederman and Stefan Buck of F&R. As the building was occupied and in accordance with the project scope of work, the survey was limited to utilizing non-destructive sampling techniques. Enclosed columns and piping/ventilation chases within enclosures or behind walls were not surveyed or assessed.

# Falls Church City Public Schools Facility Master Plan



Site Evaluations – George Mason High School and Mary Ellen Henderson Middle School

---

Two abatement cost estimates were prepared, one for “minor renovations” and one for “major renovations”. F&R defined minor renovations as renovations that impact only building finish materials and do not impact mechanical, electrical and plumbing systems. Major renovations were defined as renovations that impact both building finish materials and mechanical, electrical and plumbing systems. An assumption was made that all identified building finish materials under the scope of the survey would be removed during minor renovation activities and that all identified hazardous materials, including finish materials and mechanical, electrical and plumbing components would be removed during major renovation activities. Additionally, the cost estimates assume that the building will not be occupied during abatement activities and that all abatement activities will occur under one mobilization.



# Falls Church City Public Schools Facility Master Plan

## Site Evaluation – George Mason High School and Mary Ellen Henderson Middle School

---

### Site Evaluation - George Mason High School and Mary Ellen Henderson Middle School

#### Description

George Mason High School and Mary Ellen Henderson Middle School are located adjacent to each other in Fairfax County on Tax Map Parcels 40-3 ((1)) 91, 93 and 94. Lots 91 and 94 are zoned R-1; Lot 93 is split-zoned R-1 and C-8. The total site acreage is 34.46 acres. The schools are bounded by Leesburg Pike (Route 7) to the south, Custis Memorial Parkway (I-66) to the west, the West Falls Church Metro Station to the north and Haycock Road (Route 703) to the east. Site access is from Leesburg Pike and Haycock Road.

The site is approximately 34.46 acres in size.

According to the County tax records, the total gross floor area of the two schools is 292,686 SF. A total of 434 surface parking spaces are provided, of which 12 spaces are accessible and designated for handicap parking. The site includes a 60 foot softball diamond, a 90 foot baseball diamond, 8 tennis courts, 2 outdoor basketball courts, and a football stadium with turf field.

#### Zoning Requirements

##### **Maximum FAR**

According to the Fairfax County Department of Tax Administration records, Lot 91 contains 560,739 square feet in area, Lot 94 contains 1,078,851 square feet in area, and Lot 93 contains 71,566 square feet in area. According to a boundary survey completed by PHR&A dated January 10, 1999, Lot 91 contains 362,202 square feet in area, Lot 94 contains 1,069,514 square feet in area, and Lot 93 contains 69,542 square feet in area. Lots 91 and 94 are zoned R-1 and may be developed with a public use to a maximum floor area ratio (FAR) of 0.20. Lot 93 is split zoned R-1 and C-8. The portion of Lot 93 that is zoned R-1 contains 56,510 square feet; the portion of Lot 93 that is zoned C-8 is 12,932 square feet. FAR is a bulk regulation and pursuant to Par. 1 of Section 2-307 of the Zoning Ordinance, no structure or part thereof may be built or moved on a lot which does not meet all the maximum bulk regulations of the zoning district in which the structure is located. Therefore, if a structure is located in the R-1 portion of the lot then only that square footage Zoned R-1 may be used to calculate the maximum permitted GFA on the property.

Based on the boundary survey, the entire site area would include 1,501,258 square feet. Of this, approximately 1,488,326 is Zoned R-1, and approximately 297,665 square feet of GFA would be permitted on this portion of the site. Based upon the approved site plans for the site, 292,686 square feet of GFA exists on the site. Therefore it appears that only additional 4,979 square feet of GFA could be constructed on the property under the existing zoning.

The FAR limitation may trigger the need to rezone the property to permit expansion of the existing school facilities. It should be noted that Fairfax County rezoned other properties across the County to

---

# Falls Church City Public Schools Facility Master Plan



Site Evaluations – George Mason High School and Mary Ellen Henderson Middle School

---

allow a more dense public use to meet an increasing school population. While a rezoning would require a separate process, it is anticipated that pursuing a higher density with a rezoning on the property would be achievable. The County’s Comprehensive Plan identifies that the school property and the properties immediately surrounding it, is favorable toward higher densities. As a result, it is anticipated that the language of the Comprehensive Plan would be supportive of a rezoning of the school property.

## Yard Requirements/Setbacks

In the R-1 zoning district the maximum building height for public uses is 60’. The minimum yard requirements include:

Front yard:	Controlled by a 50° angle of bulk plane, but not less than 40’
Side yard:	Controlled by a 45° angle of bulk plane, but not less than 20’
Rear yard:	Controlled by a 45° angle of bulk plane, but not less than 25’

## Landscaping/Screening Requirement

Any development program on the subject property must comply with the applicable provisions set forth in Article 13 of the Fairfax County Zoning Ordinance. The requirements include:

Interior Parking Lot Landscaping:	5%
Peripheral Parking Lot Landscaping:	Abuts Property – 4 feet Abuts Street – 10 feet
Tree Cover	20%
Open Space	30%
Transitional Screening/Barrier	
North Property Line	TSY 2 (35’), Barrier D, E, or F
East Property Line	No Requirement
South Property Line	TSY 2 (35’), Barrier D, E, or F
West Property Line	TSY 2 (35’), Barrier D, E, or F

According to the last site plan permitted for the property, the following summarizes the landscape coverage required to address parking lot and peripheral landscaping requirements:

Interior Parking Lot Landscaping Required (5%)	14,733 SF
Interior Parking Lot Landscaping Provided	16,781 SF
Tree Cover in the R-1 District:	
Required	124,923 SF



# Falls Church City Public Schools Facility Master Plan

## Site Evaluation – George Mason High School and Mary Ellen Henderson Middle School

---

Provided	130,125 SF
Tree Cover in the C-8 District	
Required	1,123 SF
Provided	1,156 SF

It is likely that future additions to the existing schools would require additional landscaping, since the County requirements for tree cover and parking lot landscaping are currently being met with little additional coverage.

### Countywide Trail Requirement

Any improvements on the property that require a site permit must comply with the Fairfax County Countywide Trail Plan. This Plan requires an 8’ asphalt or concrete trail along Leesburg Pike and Hancock Road. There is an existing 5’ sidewalk along portions of Leesburg Pike and a 4’-5’ sidewalk along Hancock Road that ties into an 8’ trail at the northeast property line. The existing sidewalks will need to be reconstructed to meet the current trail requirement or a trail waiver will be required to reaffirm the existing configuration.

### Parking Requirements

The requirement as set forth in Article 10 of the Zoning Ordinance reads as follows for “Other Uses - High School”: As determined by the Director, based on a review of each proposal to include such factors as the occupancy load of all classroom facilities, auditoriums and stadiums, proposed special education programs, and student-teacher ratios, and the availability of areas on site that can be used for auxiliary parking in times of peak demand; but in no instance less than three-tenths (0.3) space per student, based on the maximum number of students attending classes at any one time. Based on this requirement, the minimum number of parking spaces will be determined by the maximum number of students attending classes at any one time.

The parking totals reflected on the most recently approved site plan for the middle and high school reflects the following:

High School	650 Students	
Required Parking	0.3 Spaces / Student	
Required Parking	195 Spaces	
Middle School	80 staff/600 Students	
Required Parking	1 Space/Staff+ 4 Spaces for Visitors	
Required Parking	84 Spaces	
Total Required Parking	279 Spaces	
Total Provided Parking	434 Spaces	
Total H/C Parking Required	9 Spaces	

---

# Falls Church City Public Schools Facility Master Plan



## Site Evaluations – George Mason High School and Mary Ellen Henderson Middle School

---

Total HC Parking Provided	12 Spaces
Total H/C Van Parking Required	2 Spaces
Total H/C Van Parking Provided	8 Spaces
Total Loading Spaces Required	3 Spaces
Total Loading Spaces Provided	5 Spaces

Existing parking areas are asphalt paved and constructed in accordance with VDOT/Fairfax County specifications. The following standard pavement section was utilized for recently paved asphalt parking areas:

Top Course:	2" Asphalt Surface Course SM-9.5A
Intermediate:	3" Asphalt Base Course BM-25.0
Base:	6" Aggregate Material Type 21B

### **Fairfax County Comprehensive Plan**

George Mason High School and Mary Ellen Henderson Middle School located with the McLean Planning District of the Fairfax County Comprehensive Plan. The schools are within a specialized planning area around the West Falls Church Transit Station, particularly land unit "A". The intention of the Transit Area designation is to capitalize on the opportunity to provide transit focused housing employment locations, while still maintaining the existing, nearby land uses.

A copy of the County's Comprehensive Plan language for the area around the West Falls Church Transit Station is included in the appendix of this report.

### **Site Utilities**

#### **Water**

Service is provided by Falls Church Department of Public Utilities. An existing 8" and 20" water main is located across the site frontage within the west bound lane of Leesburg Pike (Route 7). Both mains turn northeast at the intersection of Haycock Road (Route 703) and Leesburg Pike. At this point, the water mains enter the southeast corner of the site within the existing eastern parking lots that parallel Haycock Road and continue north. A 8"X20" tap of the 20" main in Leesburg Pike brings water into the site within an existing access road that runs north between the Mary Ellen Henderson Middle School and George Mason High School and turns east along the northern access road to connect into the existing 20" water main located along the eastern property line. Two 6" lines tap off this 8" line to feed the Falls Church City Park to the northwest and an existing offsite building to the northwest. Two fire hydrants are located on the 8" line; one on the east side and one on the north side of the high school.

---

## Site Evaluation – George Mason High School and Mary Ellen Henderson Middle School

---

An 8”X8” tap and 8”X20” tap of the 8” and 20” water mains located in Leesburg Pike feed two separate onsite fire hydrants located to the south of the Mary Ellen Henderson Middle School and in the southern parking lot of the George Mason High School, respectively. Additionally, an existing fire hydrant is located along Haycock Road at the southeast corner of the site.

A 3” domestic connection and 4” fire line for the high school is located on the southeastern side of the existing building that taps off the 8” water main in Leesburg Pike. An additional 8” fire line tees off the onsite 8” line that connects at the western side of the high school. It is anticipated that these connections can be maintained with construction of any expansion of the existing facilities.

A 4” domestic connection and 6” fire line for the middle school is located on the south side of the existing building that taps off the 8” water line in the access road. It is anticipated that these connections can be maintained with construction of any expansion of the existing facilities.

### **Sanitary Sewer**

Existing service is provided by the City of Falls Church Department of Environmental Services. An existing sanitary sewer is located in Leesburg Pike (Route 7) at the south west corner of the site and continues west. Dual 4” sanitary sewer laterals located on the south side of the middle school tie into a 3” force main that is located along the site frontage of Leesburg Pike. An existing sanitary sewer lateral for the high school ties to the terminal end of the sanitary sewer main. There are no known inadequacies of the existing sewer line. It is anticipated that the existing sanitary sewer lateral can be maintained with construction of any expansion of the existing facilities.

### **Storm Drainage**

Three existing storm sewer systems provide the outfall for the school site. Two of the existing storm sewer outfalls are located at the Route 7 right-of-way at the southwest corner of the site and at the Route 703 right-of-way at the south east corner of the site. The third storm sewer system outfalls at the northwest corner of the site to an existing concrete ditch that runs east along I- 66. Adequacy of these storm sewer systems will need to be verified upon any future site development. Offsite improvements to these storm sewer systems are not presently anticipated.

The existing storm drainage system on the northern side of the existing building will need to be reworked to adequately drain the site if the building is expanded to the north. Where possible, the existing stormwater management facilities should be maintained to address a portion of the overall storm water management requirements.

### **Storm Water Management**

With relocation of the onsite athletic fields to ready the site for construction of the Middle School and construction of additional onsite parking, stormwater management facilities were constructed to meet the minimum County requirements for stormwater management. Stormwater detention was provided using underground detention in the form of a two 96” diameter corrugated metal pipes. Best Management Practices (BMP’s) were addressed with the use of a DC Sandfilter, Stormfilters, and

# Falls Church City Public Schools Facility Master Plan



Site Evaluations – George Mason High School and Mary Ellen Henderson Middle School

---

Filterras (water quality inlets). Both SWM detention and BMP's were located in the transfer site. The water quality requirement with the site improvements required a 19.1% phosphorous removal and the stormwater management facilities met this requirement with no surplus capacity for future expansion.

Stormwater detention for the site as summarized in the most recent site plan for the site, reflects the following:

Allowable Runoff:

Q (2-year) = 20.05 CFS  
Q (10-year) = 26.08 CFS

Calculated Peak Discharge:

Q (2-year) = 8.17 CFS  
Q (10-year) = 19.61 CFS

As a result, it appears that some over-detention is occurring within the constructed stormwater detention facilities which may allow a minor amount of additional impervious area to be constructed without upgrading the stormwater detention facilities.

Any future site development/expansion would be subject to the storm water management requirements as identified within the Fairfax County Public Facilities Manual (PFM). These requirements include both storm water detention (peak flow reduction) and water quality enhancement.

Where possible, the existing stormwater management facilities located beneath the existing parking lots on the north and east side of the school will be maintained to help address the stormwater detention requirement. With any future site development, the 2-year and 10-year peak flow from the site will need to be reduced to at or below the existing peak flow for these recurrence interval storms. Additional onsite measures will be required to address peak flow detention, beyond that which can be accommodated in the stormwater management conduits that will be maintained.

If the proposed development has a net increase of impervious area less than 20% then the redevelopment formula can be utilized for computing the BMP requirement of any future site enhancements:

$$[1 - 0.9(I_{pre}/I_{post})] \times 100\% = \% P \text{ Removal}$$

If the proposed development has a net increase of impervious area less than 20% then the above formula can be utilized for computing the BMP requirement.

In order to address the BMP requirement for the site, the following measures may be incorporated:

## Site Evaluation – George Mason High School and Mary Ellen Henderson Middle School

---

- utilization of percolation trenches within proposed parking areas to promote infiltration
- utilization of a bioretention filter to promote infiltration
- dedication of natural open space (Water Quality Management Area)
- consideration of green roof elements to promote infiltration.

Verification of the infiltration capacity of the onsite soils is required to analyze the design requirements.

### Site Access

There are two main access points to the site. One is located on Leesburg Pike and the other is at the northeast corner along Hancock Road. Additionally, access to the parking lots is provided off of Leesburg Pike and Hancock Road. It is anticipated that the four entrances will be maintained. Sight distance for the existing entrances will be confirmed with the final site plan.

The following standard pavement section is assumed for new asphalt access roads and travel aisles within the parking areas:

Top Course:	1.5" Asphalt Surface Course SM-9.5A
Intermediate:	4" Asphalt Base Course BM-25.0
Base:	8" Aggregate Material Type 21B

### Environmental

#### Floodplains

Based on the Fairfax County Chesapeake Bay Preservation Map there are no identified 100-year floodplains in the vicinity of the lots that comprise the High School and Middle School Site.

#### Resource Protection Areas

Resource Protection Area (RPA) is the component of the Chesapeake Bay Preservation Area comprised of lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. RPA's shall include any land characterized by the following features:

- A tidal wetland
- A tidal shore
- A water body with perennial flow

# Falls Church City Public Schools Facility Master Plan



## Site Evaluations – George Mason High School and Mary Ellen Henderson Middle School

---

- A nontidal wetland connected by surface flow and contiguous to a tidal wetland or a water body with perennial flow
- A buffer area as follows
  - Any land with a major floodplain
  - Any land within 100 feet within an RPA feature

RPAs cannot be cleared without special permitting.

Based on the Fairfax County Chesapeake Bay Preservation Map, there are no identified RPAs within the lots that comprise the High School and Middle School.

### **Wetlands**

There were no identified wetland areas on the site plan for the Middle School. The site should be field inspected to confirm that the area that will be impacted with construction of any proposed expansion is void of jurisdictional wetlands. If wetlands are identified, they will be field confirmed by the USACE and the Virginia Department of Environmental Quality (DEQ), surveyed and reflected on a Jurisdictional Determination (JD) that is approved by the USACE. Disturbance of any wetlands, if identified, will be avoided to the extent possible with site construction.

## **George Mason High School**

### **Architectural Assessment**

Construction of George Mason High School was completed in 1954 with several minor additions over the years and one major addition in 1994.

Upper Floor:	159,798 SF
Lower Floor:	40,227 SF
Total:	200,025 SF

The building is basically a one-story building with three sections that have a lower level. The current school layout is the product of piece by piece addition at several stages, according to the needs at that time.

A total of 5 major ADA-compliant entrances provide access to the school: two on the south side, two on the north side, one each on the east and west sides. The building is organized along two major corridors running north-south and east-west with several secondary corridors. Using this corridor framework, the school is divided into 6 major sections according to educational functions or class programs. The corridors are long and relatively low, averaging 7'-6" from floor to ceiling. Typical ceilings consist of .... The floors are mostly tiled, with some areas that show wear and may need to be replaced. Typical wall finishes include ....

In general the building is compliant with the building codes, except a few instances of door opening clearance or excessive accessible ramp lengths. The auditorium lobby is not directly ADA-accessible due to the steps from the school lobby. A person in a wheel chair needs to either go to the outside and come back in thru the auditorium exterior doors or move around the other side of the auditorium, passing by a more than 30 ft long ramp and 3 more set of corridor doors. The stage area is not directly accessible to the audience seating area.

The school does not have enough storage space. Any under-utilized room may become a storage space.

#### **Classrooms:**

George Mason has more than 54 classrooms. Room sizes vary from 600 SF to 1,000 SF. Also there are 6 classroom trailers on the south side of the school, adjacent to Route 7.

#### **Type of Construction:**

Steel frame and face brick on concrete masonry unit back-up. Window systems are typically... Except for a few small areas of flat roof with roofing membrane, the school's roof is covered with low slope metal roofing panels. All exterior materials are in... shape.

# Falls Church City Public Schools

## Facility Master Plan



Facility Evaluations – George Mason High School

---

### **User Group and Construction Type:**

The building is mixed-use of Groups E (Educational), A-3 (Gymnasium, library) and B (Office)  
The construction type is 2B

### **Mechanical, Plumbing, Electrical, Life Safety Assessment**

#### **Mechanical (HVAC)**

The building HVAC system consists of 126 air-cooled split systems with hot water heat, 46 thru-the-wall incremental A/C units with hot water heat. The system also includes 6 self-contained roof-top A/C units with gas heat and (1) self-contained VAV type A/C unit with hot water heat which serves the POD area, which was renovated in 1998. Hot water for heating is provided from two (2) boiler plants.

The split systems are horizontal type ceiling mounted with DX cooling coil and remote air cooled condensing units (ACCU's). The ACCU's are located on the roof and on grade outside the building. Approximately eleven (11) of the units serve classrooms, offices and corridors and range from ½ to 5 tons in capacity. Twelve (12) of the split systems are 100% outside air units which provide ventilation air to the 110 smaller systems.

All of the split systems, thru-the-wall A/C units and roof top units were installed as part of the 1994 renovations and additions project. They appear to be well maintained and in good condition. The only issue of concern is related to humidity control problems with the 100% outside air units.

Boiler plant 1 is located at the west end of the building and consists of two (2) 6275 CFH gas-fired water tube boilers. Boiler No. 1 was installed in 1952 and boiler 1A was installed in 1972.. One boiler is a stand-by. The boilers were re-tubed during the 1994 renovation project and all of the hot water piping was replaced. The pumps are original and should be replaced. The plant has two (2) 630 GPM capacity circulating pumps (one stand-by).

Boiler plant 2 is located at the east end of the building and consists of two (2) 3350 CFH gas-fired York Shipley steam boilers with a shell and tube hot water heat exchanger. Boiler 2 was installed in mid 60's and boiler 2A was installed in 1994. One boiler is stand-by.

The plant has two (2) 270 GPM capacity end-section centrifuged circulating pumps (one stand-by). The boilers, pumps, exhaust fans and RTU's are controlled by an Andover/ESI DDC control system. Boiler 2A and the control system were part of the 1994 renovation; however, the rest of the equipment are part of the original construction. The plant appears to be in good operating condition.

The kitchen hood exhaust air system has a gas-fired make-up air system.

### **Plumbing Systems**

The building has a 3” domestic water service which enters the building at boiler plan No. 1. There is no meter or backflow preventer inside the building.

Domestic hot water is generated by two (2) gas-fired water heaters. Heater 1 is a 400 gallon, 1000 CFH gas-fired unit located in boiler plant 1 and serves the kitchen, locker room, toilet facilities and classrooms on the west 2/3’s of the building. Heater 2 is a 200 gallon, 600 CFH gas-fired unit located in boiler plant 2 on the east end.

The water piping for both hot and cold water is insulated copper with soldered joint. The hot water piping has a temperature maintenance system utilizing self-regulating electric heat tape. All of the piping was replaced in 1994.

The below grade sanitary and storm water piping is cast iron with hub and spigot joints and is original to the buildings and additions. Most of the branch piping is new dating from the 1994 renovations. The kitchen sanitary system has a grease trap located outside below grade.

The building has two (2) low pressure natural gas services. Service no. 1 is 15,619 CFH in capacity and enters boiler room 1 (west end). The service supplies boilers 1 and 1A, RTU 1 and 2, the domestic water heater and kitchen equipment. Gas service no. 2 is 8874 CFH in capacity and enters the building at boiler room 2 (east end). The service supplies boilers 2 and 2A, water heater 2 and RTU’s 3 thru 6.

### **Fire Protection**

The building has a 6” fire service main which enters the building in a sprinkler room located adjacent to boiler room 1. The fire main supplies water to sprinkler zone control valves located throughout the building. The building is fully sprinklered by a wet-pipe system.

The building does not have a fire pump

### **Electrical Systems**

#### **A. Electrical Service**

The existing power company is Dominion Virginia Power. The main building of this school has (2) electrical services with a third service for the remote trailers. Service one is provided through a power company step down pad mounted transformer. This service enters the building at a dedicated electrical room adjacent to Gymnasium B101. This electrical service was upgraded in 1994. The power company electric meter is installed out side on the wall of the main electrical room. The existing power company pad mounted transformer is feeding 277/480 volt, 3000 amp. The existing switchboard is Square-D, model QED. There are three sections to this switchgear which include a CT and pull section, 3000A main

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – George Mason High School

---

service disconnect section and a distribution section. The switchboard has a Square-D Powerlogic electronic meter which is not operable. This switchboard has little space left for expansion.

Service two is provided through a power company step down pad mounted transformer. This service enters the building at a dedicated electrical room E203. This electrical service was added in 1994 as part of a renovation and addition project. The power company electric meter is installed inside on the wall of the main electrical room. The existing power company pad mounted transformer is feeding 277/480 volt, 1600 amp. The existing switchboard is Square-D, model QED. There are three sections to this switchgear which include a CT and pull section, 1600A main service disconnect section and a distribution section. The switchboard has a Square-D Powerlogic electronic meter which is not operable. This switchboard has space for expansion, however, the service size is small and there may be ampacity issues. We are currently coordinating with Dominion Virginia Power to obtain current peak demand loads.

The existing switchboards do not contain any ground fault protection as per current code requirements. The existing switchboards do not contain any transient voltage surge suppression. The (2) main electrical services are located on remote sides of the building. There is no signage on the switchboards that indicate that multiple services enter the building or that there are multiple main disconnects as per code requirements.

#### B. Power Distribution System

The existing switchboards serve the entire building through a number of branch circuit panelboards. Most of the panelboards have been replaced in the 1994 renovation project. There are a few remaining panelboards from the 1950/1960 era. These areas include in part, boiler rooms and the auditorium. These panels will be difficult to find parts for any future renovations. If any of the wiring for these panels is original wiring, then the circuits fed from these panels have reached the end of their useful life. The kitchen panelboard was never installed properly in the wall. Because of this a panel cover/door can not be installed. A make-shift wood frame with hinges was built over the panel to serve as the panel door. Typically all of the panels are filled to capacity.

Electric closets are scattered throughout the school. All of the existing electrical rooms are filled to capacity. No additional equipment can be added and still meet the working clearance requirements.

#### C. Emergency Power Distribution System

The building has a Kohler generator. The generator is rated at 100kW/100kVA, 480/277 volt, 3-Phase and has a 150A in-line circuit breaker. The generator has a sub-base mounted fuel tank and operates on diesel gas. The existing generator was installed during 1994 renovation. The existing generator is located outside of the electrical room adjacent to the Gymnasium. The emergency system is operational; however, it is not adequate to handle additional loads with the current connected load.

The emergency generator feeds a Kohler automatic transfer switch "ATS" which further feeds to panel EP which contains a 175A main circuit breaker. This equipment is located in the main electric room adjacent to the gymnasium. The existing automatic transfer switch and emergency panel were also installed in 1994, and are in fair condition. The emergency system serves emergency lights, exit lights, fire alarm system, CATV system, sound system and telephone/communication. In addition, the generator feeds all the kitchen walk-in refrigerator/freezers and coolers.

### D. Lighting System

Most of the lighting fixtures were replaced in 1994. Existing lighting fixtures in classroom, media center, offices and corridors are 2' X 4' recessed fluorescent. The fluorescent lights utilize T12 technology which is old and not energy efficient. The corridors also contain downlights with twin tube fluorescent lamps. The existing lighting fixtures in the gymnasium are high intensity discharge (HID) fixtures. The lighting level in classrooms, corridors, and gymnasium is poor. The light fixtures in the cafeteria are a combination of are 2' X 4' recessed fluorescent and incandescent downlights. The downlights can not be converted to accept fluorescent lamps due to having an odd size lamp socket. Exit lights utilize fluorescent lamps. Their appearance is old and discolored.

Switching control is through single toggle switches throughout the building with a few motion sensor switches. This does not meet the current energy efficiency code requirements.

The auditorium has a lighting control system that dates back to 1950/1960's. This system utilizes old technology and does not have the flexibility of control as current systems.

On the exterior, there was an old tennis court that was transformed into a parking lot. The light fixtures for this area are the original 1950/1960's fixtures that served the tennis court. The poles are rusted and the light fixtures are a flood light style that create a substantial amount of light pollution over the property line and do not provide acceptable lighting levels for parking lots. There are some exit discharge locations that do not have sufficient emergency egress lighting. The building lacks proper security lighting around the perimeter of the building. Some of the exterior lights have clearly been replaced as the existing fixtures that have not been replaced are old, discolored and some are damaged.

### E. Power Outlets

The power outlets located in the classrooms and offices were provided in 1994 addition/renovations. The original section of the building from the 1950's had few recessed receptacles. Current power requirements require more receptacles and circuits. Because of increased requirements surface mounted conduit and receptacles have been added in offices and classrooms. The auditorium and boiler rooms have a combination of original receptacles and wiring from the 1950's and new receptacles that were added over the years.

In several of the science or technology type classrooms, there are extension cords draped across ceilings. This should create the need for ceiling mount receptacles or power reels.

### F. Fire Alarm System

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – George Mason High School

---

The existing fire alarm system is an Edwards EST system. The control panel is less than 10 years old. The devices were upgraded in 1994. The existing fire alarm control panel is located in the main office. The building is sprinklered and flow and tamper switches are tied to the fire alarm system. There are pull stations at all of the exits. The entire school has audio/visual notification devices throughout. Notification is delivered through horns and strobes. There are fire alarm bells from pre-1994 work that are connected to the fire alarm system.

#### G. Sound System

The existing sound system console manufactured by Dukane is located in the main office. Booster panels are installed throughout the facility. The existing sound system main equipment was installed in 1994. The classrooms have surface mounted speakers and call back switches. Corridors and cafeteria have surface mount bull horns.

There is an auxiliary sound reinforcement system in the gymnasium.

#### H. Telephone/ CATV and Intercommunications Systems

The existing main CATV HUB is located in the existing communication room. The existing telecommunication main HUB is located in the existing communications room. All the existing telephone/data outlets are surface mounted. Most of the classrooms have one telephone and one data outlet, but some classrooms have one telephone and two data outlets. Data wiring is CAT 5 type. There are computer data repeaters installed throughout the facility in corridors surface mounted on walls. These do not provide for a clean and neat installation and are prone to damage based on their location.

There are telephone data closets throughout the facility. These rooms share CATV, telephone punchblocks and backboard and data racks. The rooms are filled to capacity.

#### I. Master Clock and Program Bell System

The master clock system is integral with the Dukane sound system located in the main office.

#### K. Building Security System

The school is equipped with an access control and closed caption television (CCTV) security system. The system is web based with control panels in various locations. There are card readers at each entrance and security cameras located in corridors and at exterior exits. There is a video monitoring station in the school.

### **Hazardous Materials Assessment**

F&R surveyed George Mason High School to identify ACM, LBP and suspect PCB and mercury containing equipment utilizing non-destructive sampling. The following paragraphs summarize the findings:

- F&R identified asbestos-containing mirror mastic in Rooms B104 and E149.
- F&R identified asbestos-containing 12"x12" black vinyl floor tile and associated mastic in the auditorium loft.
- F&R identified asbestos-containing saddle block insulation in Boiler Room E007.
- F&R identified asbestos-containing window caulk throughout the exterior of the school.
- F&R observed suspect asbestos-containing mudded pipe fittings in the hallway outside Room F001.
- F&R observed suspect asbestos-containing metal fire doors throughout the building.
- F&R identified boilers with presumed asbestos-containing interior components in the B-Wing Boiler Room.
- F&R identified presumed asbestos-containing fume hood panels in Rooms A121, A124, A126 and A127.
- F&R identified three elevators throughout the school presumed to contain asbestos-containing interior and shaft components.
- F&R identified water fountains throughout the building that are presumed to contain asbestos-containing pipe wrap.
- F&R assumed the gymnasium floor felt paper and mastic to be asbestos-containing.
- F&R assumed the main stage curtain in the auditorium to be asbestos-containing.
- F&R identified areas of lead based paint throughout the school.
- F&R observed mercury-containing thermostats in the B-Wing Boiler Room and Maintenance Office.
- F&R visually inspected fluorescent light fixtures throughout the school. Based on our inspection, there does not appear to be any regulated hazardous materials within these light fixtures.

### **Asbestos-Containing Material**

During F&R's non-destructive survey for ACM the following materials were sampled: vinyl floor tiles and associated mastics, ceiling tile, vinyl covebase mastic, white duct seam sealant, grey duct seam sealant, wall plaster, slate window sills, drywall and associated joint compound, carpet mastic, saddle block insulation, window caulk, blackboard mastic, siding material, mirror mastic, ceiling tile mastic and flooring material. The following materials were determined to be asbestos-containing: 12"x12" black vinyl floor tile and associated black mastic, saddle block insulation, window caulk and black mirror mastic. F&R presumed the following materials to be asbestos-containing: mudded pipe fittings, metal fire doors, interior boiler components (B-Wing Boiler Room only), fume hood panels, interior elevator/elevator shaft components, water fountain pipe wrap, hardwood floor felt paper and mastic and the main stage curtain.

F&R identified approximately 400 square feet of asbestos-containing mirror mastic in Rooms B104 and E149. This material was observed in good condition at the time of the survey. F&R identified

---

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – George Mason High School

---

approximately 150 square feet of 12"x12" black vinyl floor tile and associated black mastic in the auditorium loft. This material was observed in good condition at the time of the survey. F&R identified approximately 10 square feet of asbestos-containing saddle block insulation on the hot water tank in Boiler Room E007. This material was observed in poor condition at the time of the survey. F&R identified approximately 500 linear feet of remnant window caulking throughout the exterior of the school. This material was observed in fair condition at the time of the survey.

F&R observed approximately 10 mudded pipe fittings outside Room F001 that are presumed to be asbestos-containing. These fittings were observed in good condition at the time of the survey. For the purposes of this study, F&R assumes that there are approximately 500 mudded pipe fittings located behind solid walls and ceilings and within pipe chases throughout the building. F&R observed 22 metal fire doors throughout the school that are presumed to be asbestos-containing. The doors were observed in good condition at the time of the survey. F&R observed two boilers located in the B-Wing Boiler Room that are presumed to contain asbestos-containing interior components. These interior components were inaccessible at the time of the survey. F&R observed approximately 200 square feet of presumed asbestos-containing fume hood panels in Rooms A121, A124, A126 and A127. The fume hood panels were observed in good condition at the time of the survey. F&R identified three elevators located throughout the school that are presumed to contain asbestos-containing interior and shaft components. These materials include elevator brakes, elevator cab insulation, elevator shaft walls and spray-on fireproofing located in the elevator shaft. The interior elevator components and elevator shaft were inaccessible at the time of our inspection. F&R observed approximately 20 water fountains located throughout the building. These water fountains are assumed to contain asbestos-containing pipe wrap. The water fountain pipe wrap was inaccessible at the time of our inspection. F&R assumed the approximately 5,000 square foot gymnasium floor to have asbestos-containing felt paper and mastic associated with it. The felt paper and mastic was inaccessible at the time of our inspection. F&R assumed that the approximately 2,500 square foot stage curtain in the auditorium is asbestos-containing. This material was observed in good condition at the time of the survey.

As part of this study, F&R reviewed an Asbestos Management Plan for the school, prepared by Professional Service Industries, Inc. (PSI) and dated May 13, 2003. The PSI report identified the following asbestos-containing materials within the school, all of which were presumed asbestos-containing: metal fire doors, mudded pipe fittings and fume hood panels. F&R observed these materials within the school during our survey.

F&R recommends that all of the identified ACM be removed by a Commonwealth of Virginia licensed asbestos abatement contractor prior to impact by renovation or demolition activities. Furthermore, all suspect ACM that has not been previously sampled should be analyzed for asbestos prior to impact by renovation or demolition activities. Additionally, F&R recommends that the 2003 Asbestos Management Plan be updated as the Asbestos Hazard Emergency Response Act (AHERA) requires that these plans be updated every three years.

## Lead Based Paint

F&R conducted a LBP screening of the painted surfaces located throughout the interior of George Mason High School. LBP was identified on the following building components: grey cinderblock walls in the auditorium, grey wood baseboards in the auditorium, white metal I-beams and ducts in the gymnasium and white metal window lintels in the gymnasium. Since this was a limited LBP survey additional LBP surfaces may be present that were not tested. All painted surfaces should be assumed to contain LBP or lead-containing paint.

In general, if structures are to be removed or demolished, typical demolition techniques can be used without LBP becoming an issue of concern. However, if building components containing LBP are to be stripped and repainted, precautions would need to be taken. Specifically, if these building components are to be sanded, abraded or heated to remove the LBP, workers trained in LBP removal should be contracted for the work. At this time, F&R believes that the presence of LBP will have only minimal impact to the project, primarily with contractor compliance with current OSHA regulations.

## Mercury-Containing Equipment

F&R identified 7 thermostats that contained mercury-containing switches. These thermostats were observed in the B-Wing Boiler Room and in the Maintenance Office. Fluorescent light tubes were also inspected for the presence of mercury. All of the fluorescent light tubes observed by F&R contained the low-mercury symbol, indicating that they do not contain regulated levels of mercury. Based upon F&R's observations it appears that there are no fluorescent light tubes within the school with regulated levels of mercury.

## PCB-Containing Equipment

F&R visually surveyed a representative number of light ballasts throughout George Mason High School. All of the light ballasts observed contained the "No PCB" label and therefore PCB-containing ballasts are not likely a concern at this property; however some PCB-containing ballasts may still remain within the school. No other potential PCB-containing equipment was observed by F&R.

## Cost Estimates

F&R has developed conceptual cost estimates for the abatement of hazardous materials associated with major and minor renovations at George Mason High School. F&R is assuming that no work is to be conducted on the roof.

### "Minor Renovation" Cost Estimate

- Mirror Mastic – Approximately 400 square feet of asbestos-containing mirror mastic was observed in Rooms B104 and E149. F&R assumes a cost of \$3.00 per square foot for abatement of the mirror mastic for a total cost of \$1,200.
- 12"x12" Black Vinyl Floor Tile and Associated Mastic – Approximately 150 square feet of asbestos-containing 12"x12" black vinyl floor tile and associated mastic was observed in the

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – George Mason High School

---

auditorium loft. F&R assumes a total cost of \$1,500.00 for abatement of the 12"x12" black vinyl floor tile and associated mastic.

- Window Caulk – Approximately 500 linear feet of asbestos-containing window caulk was observed throughout the exterior of the school. F&R assumes a cost of \$10.00 a linear foot for abatement of the window caulk for a total cost of \$5,000.
- Metal Fire Doors – F&R observed 22 metal fire doors throughout the building that are assumed to be asbestos-containing. F&R assumes an abatement cost of \$100.00 per door for a total abatement cost of \$2,200.00.
- Fume Hood Panels – F&R observed approximately 200 square feet of fume hood panels in Rooms A121, A124, A126 and A127 assumed to be asbestos-containing. F&R assumes a cost of \$10.00 per square foot for abatement of the fume hood panels for a total cost of \$2,000.
- Gymnasium Floor Felt Paper and Mastic – F&R assumed the approximately 5,000 square foot gymnasium floor to contain asbestos containing felt paper and mastic. F&R assumes a cost of \$5.00 a square foot for abatement of this material for a total cost of \$25,000.
- Main Stage Curtain – F&R assumed the approximately 2,500 square foot main stage curtain to be asbestos-containing. F&R assumes a cost of \$5,000 for removal of this material.
- Lead Based Paint – F&R assumes that structures containing LBP can be renovated or demolished utilizing typical demolition techniques without LBP becoming an issue of concern.

The total estimated cost for the removal of identified and suspected hazardous materials associated with a minor renovation at George Mason High School is \$41,900. F&R typically adds an additional 25% contingency to estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated to be 15 to 25% of the abatement costs. The total estimated costs to remove the identified and suspected hazardous materials associated with a minor renovation at George Mason High School, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$65,469.

“Major Renovation” Cost Estimate (Estimate also includes abatement of the hazardous materials referenced in the “minor renovation” cost estimate section)

- Saddle Block Insulation – Approximately 10 square feet of asbestos-containing saddle block insulation was observed in Boiler Room E007. F&R assumes a total of \$1,500.00 for abatement of the saddle block insulation.
- Mudded Pipe Fittings – F&R observed approximately 10 mudded pipe fittings adjacent to Room F001 that are assumed to be asbestos-containing. For the purposes of this study, F&R assumes that approximately 500 mudded pipe fittings are located throughout the school behind solid ceilings and walls and within pipe chases. An abatement cost of \$50.00 per fitting is assumed for a total cost of \$25,000 for abatement of the fittings.
- Interior Boiler Components – F&R observed two boilers in the B-Wing Boiler Room assumed to contain asbestos-containing interior components. F&R assumes a cost of \$2,500 per boiler for abatement of these components for a total cost of \$5,000.

- Interior Elevator and Elevator Shaft Components – There are three elevators located throughout the school. F&R assumed that interior components within the elevators and shafts are asbestos-containing. These materials include elevator brakes, elevator cab insulation, elevator shaft walls and spray-on fireproofing located in the elevator shaft. F&R assumes a cost of approximately \$10,000 per elevator for abatement for a total cost of \$30,000.
- Water Fountain Pipe Wrap – F&R observed approximately 20 water fountains located throughout the building assumed to contain asbestos-containing pipe wrap. F&R assumes a cost of \$250.00 per water fountain for abatement of this material for a total cost of \$5,000.
- Mercury-Containing Thermostats – F&R observed 7 mercury-containing thermostats throughout the school. F&R assumes that removal of the thermostats will be approximately \$1,500.00.

The total estimated cost for the removal of identified and suspected hazardous materials associated with a major renovation at George Mason High School is \$109,900. F&R typically adds an additional 25% contingency to estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated to be 15 to 25% of the abatement costs. The total estimated costs to remove the identified and suspected hazardous materials associated with a major renovation at George Mason High School, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$171,719.

**Falls Church City Public Schools  
Facility Master Plan**



Facility Evaluations – George Mason High School

---

## **Mary Ellen Henderson Middle School**

### **Architectural Assessment**

Mary Ellen Henderson Middle School was built in 2004 to accommodate middle school students moving from the adjacent George Mason High School. The building consists of the following spaces:

Cellar floor:	27,612 SF
1 <sup>st</sup> floor:	37,281 SF
2 <sup>nd</sup> floor:	31,726 SF
3 <sup>rd</sup> floor:	32,169 SF
Total:	128,788 SF

Two major entrances are located on the north and south side of the school. They serve as main access to the two floors above. The main controlled entrance is on the south side and serves as the public entrance for athletic events in the gymnasium on the cellar level below. Mary Ellen is organized along a north-south corridor. A central stair connects all three above-ground floors.

The floors are typically sheet linoleum. Walls finishes are constructed of...  
Ceilings are typically ...in height and are constructed of...

### **Classrooms:**

The school has 46 classrooms. Room sizes vary from 600 SF to 1,000 SF.

### **Type of Construction:**

Steel frame and face brick or split face brick on concrete masonry unit back-up. Window systems are typically... Roof construction consists of.... All exterior materials are still in good shape due to the newness of the facility.

### **User Group and Construction Type:**

The building is mixed-use of Groups E (Educational), A-3 (Gymnasium) and B (Office). The construction type is 2A protected.

# Falls Church City Public Schools

## Facility Master Plan



Facility Evaluations – Mary Ellen Henderson Middle School

---

### **Mechanical, Plumbing, Electrical, Life Safety Assessment**

#### **Mechanical (HVAC)**

The HVAC system consisting of twelve (12) self-contained, air cooled roof-top A/C units with gas heat and one (1) modular indoor air handling unit with DC cooling and remote air cooled condenser. The indoor air handling unit has a gas furnace for heating.

Nine (9) of the roof-top units are variable air volume (VAV) type units which serve classrooms and administration space on floors 1, 2 and 3. The units supply air to powered type VAV terminals (with electric heat) which control the temperature in their respective room or zone. The other four (4) roof-top units are constant volume type units and serve the gymnasium and cafeteria. The split system serves all spaced on the cellar level.

The controls are electronic / DDC type with a Tracer 1000 energy management system.

The HVAC system was installed in 2005 and is in excellent condition.

#### **Plumbing**

The building has a 3” domestic water service with meter and back flow preventer in cellar mechanical room.

Domestic hot water is generated by two (2) 250 gallon 570 MBH gas fired PVI water heaters.

The building has a sewage ejector to pump the effluent to the gravity sewer on site.

The plumbing systems were installed in 2005 and are in excellent condition

#### **Fire Protection**

The building has a 6” fire service main and fire pump located on the cellar level. The bildiung is fully sprinklered by a wet-pipe system.

The sprinkler system was installed in 2005 and is in excellent condition.

#### **Electrical Systems**

A. Electrical Service

The existing power company is Dominion Virginia Power. The electrical service is provided through a power company step down pad mounted transformer. This service enters the building at the main electrical room. This electrical service was added in 2004. The power company electric meter is installed inside on the wall of the main electrical room. The existing power company pad mounted transformer is feeding 277/480 volt, 4000 amp. There are five sections to this switchgear which include a CT and pull section, 1600A main service disconnect section, 2500A main service disconnect section and two distribution sections. The switchboard has an electronic meter which is currently reading 213kW demand load. This switchboard has space for expansion.

**B. Power Distribution System**

The existing switchboard serves the entire building through a number of branch circuit panelboards. The panelboards have approximately 25% spare capacity for future upgrades.

**C. Emergency Power Distribution System**

The building has a Cummins/ONAN generator. The generator is rated at 39kW, 480/277 volt, 3-Phase and has a 50A in-line circuit breaker. The generator operates on natural gas. The existing generator was installed during 2004. The existing generator is located outside of the electrical room. The emergency system is operational. The emergency generator feeds a Cummins automatic transfer switch "ATS" which further feeds to panel EMH. This equipment is located in the main electric room. The existing automatic transfer switch and emergency panel were also installed in 2004, and are in good condition. The emergency system serves emergency lights, exit lights, fire alarm system, CATV system, sound system and telephone/communication.

**D. Lighting System**

All of the lighting fixtures were installed in 2004. Existing lighting fixtures in classroom, media center, offices and corridors are recessed fluorescent. The fluorescent lights utilize T8 technology and are energy efficient. The existing lighting fixtures in the gymnasium are (8) lamp 42W compact fluorescent fixtures. The lighting fixtures are clean and in good condition. The lighting levels throughout the school are good. Exit lights utilize LED lamps.

Switching control is through motion sensor switches and meets the current energy efficiency code requirements.

The exterior lighting fixtures are in good condition and provide acceptable lighting levels.

**F. Fire Alarm System**

The existing fire alarm system is an Edwards system installed in 2004. The existing fire alarm control panel is located in the Security control room. The building is sprinklered and flow and tamper switches are tied to the fire alarm system. There are pull stations at all of the exits. The entire school has audio/visual notification devices throughout. Notification is delivered through horns and strobes.

# Falls Church City Public Schools Facility Master Plan



## Facility Evaluations – Mary Ellen Henderson Middle School

---

### G. Sound System

The existing sound system console manufactured by Bogen is located in the main office. Booster panels are installed throughout the facility. The existing sound system main equipment was installed in 2004. The classrooms have recessed mounted speakers and call back switches. Corridors and cafeteria have recessed speakers. The system is in good condition.

There is an auxiliary sound reinforcement system in the gymnasium.

### H. Telephone/ CATV and Intercommunications Systems

The existing main CATV HUB is located in the existing communication room. The existing telecommunication main HUB is located in the existing communications room. Most of the classrooms have one telephone and two data outlets. The system is in good condition.

### I. Master Clock and Program Bell System

The master clock system is integral with the Bogen sound system located in the main office.

### K. Building Security System

The school is equipped with an access control and closed caption television (CCTV) security system. The system is web based with control panels in various locations. There are card readers at each entrance and security cameras located in corridors and at exterior exits. There is a video monitoring station in the school. The system is in good condition.

## **Hazardous Materials Assessment**

F&R surveyed Mary Ellen Henderson Middle School to identify ACM, LBP and suspect PCB and mercury containing equipment utilizing non-destructive sampling. The following paragraphs summarize their findings:

- F&R did not identify any ACM within the school.
- F&R did not identify any LBP within the school.
- F&R did not identify any suspect PCB or mercury-containing equipment within the school.

## **Asbestos-Containing Material**

During F&R's limited non-destructive survey for ACM the following materials were sampled: ceiling tile, spray-on fireproofing, white duct seam sealant, grey duct seam sealant, vinyl covebase mastic and

drywall and associated joint compound. None of the materials sampled were determined to be asbestos-containing.

As part of this study, F&R reviewed a letter from the architect of record, Beery Rio Architecture + Interiors. The letter stated that to the best of Beery Rio's knowledge, no asbestos-containing materials or lead based paints were specified for use in the school and that none of these materials were used in the construction of the building. Based upon F&R's survey findings, the 2005 construction date of the building and the letter issued by Beery Rio; F&R does not consider ACM to be a concern at Mary Ellen Henderson Middle School.

### **Lead Based Paint**

F&R conducted a limited LBP screening of the painted surfaces within Mary Ellen Henderson Middle School. None of the surfaces analyzed during the screening were identified as containing LBP. Based upon F&R's screening findings, the 2005 construction date of the building and the previously referenced letter from Beery Rio; F&R does not consider LBP to be a concern at Mary Ellen Henderson Middle School.

### **Mercury-Containing Equipment**

F&R did not identify any suspect mercury-containing equipment at Mary Ellen Henderson Middle School. All of the thermostats observed within the school were electronic and the fluorescent light tubes inspected by F&R contained the low-mercury symbol, indicating that they do not contain regulated levels of mercury.

### **PCB-Containing Equipment**

F&R visually surveyed the fluorescent light ballasts within Mary Ellen Henderson Middle School for the presence of the "No PCB" label. All of the ballasts observed by F&R contained the "No PCB" label and based on the 2005 construction date of the building, F&R does not believe PCB-containing ballasts are a concern at this school. No other potential PCB-containing equipment was observed by F&R.

### **Cost Estimates**

Based upon our survey findings, F&R does not consider the presence of ACM, LBP or PCB and mercury containing equipment to have a cost impact of renovation activities at Mary Ellen Henderson Middle School.

**Falls Church City Public Schools  
Facility Master Plan**



Facility Evaluations – Mary Ellen Henderson Middle School

---



# Falls Church City Public Schools Facility Master Plan



## Facility Evaluations – Mount Daniel Elementary School

---

Open Space NA

### Transitional Screening/Barrier

North Property Line	TSY 2 (35'), Barrier D, E, or F
East Property Line	TSY 2 (35'), Barrier D, E, or F
South Property Line	TSY 2 (35'), Barrier D, E, or F
West Property Line	TSY 2 (35'), Barrier D, E, or F

According to the last site plan permitted for the property, the following summarizes the landscape coverages required to address parking lot and peripheral landscaping requirements:

Interior Parking Lot Landscaping Required (5%)	1,035 SF
Interior Parking Lot Landscaping Provided	1,200 SF
Tree Cover in the R-4 District:	
Required	55,789 SF
Provided	122,870 SF

### Parking

The requirement as set forth in Article 10 of the Zoning Ordinance reads as follows for “Other Uses - Elementary School”: As determined by the Director, based on a review of each proposal to include such factors as the occupancy load of all classroom facilities, auditoriums and stadiums, proposed special education programs, and student-teacher ratios, and the availability of areas on site that can be used for auxiliary parking in times of peak demand; but in no instance less than 1 space per faculty and staff and other full time employee plus 4 spaces for visitors. Based on this requirement, the minimum number of parking spaces will be determined by the maximum number of students attending classes at any one time.

The required number of loading spaces is based on the amount of GFA. An increase of GFA may require an additional loading space.

The parking totals reflected on the most recently approved site plan for elementary school reflects the following:

Elementary School	50 Staff
Required Parking	1 Space/Staff+ 4 Spaces for Visitors
Required Parking	54 Spaces
Total Required Parking	54 Spaces
Total Provided Parking	63 Spaces



# Falls Church City Public Schools Facility Master Plan

## Facility Evaluations – Mount Daniel Elementary School

---

Total H/C Parking Required	3 Spaces
Total H/C Parking Provided	3 Spaces
Total H/C Van Parking Required	1 Space
Total H/C Van Parking Provided	2 Spaces
Total Loading Spaces Required	2 Spaces
Total Loading Spaces Provided	2 Spaces

Existing parking areas are asphalt paved and constructed in accordance with VDOT/Fairfax County specifications. The following standard pavement section was utilized for recently paved asphalt parking areas:

- Top Course: 2" Asphalt Surface Course SM-9.5A
- Intermediate: 3" Asphalt Base Course BM-25.0
- Base: 6" Aggregate Material Type 21B

### **Fairfax County Comprehensive Plan**

Mount Daniel Elementary School is located with the McLean Planning District of the Fairfax County Comprehensive Plan. It is within a specialized planning area around the West Falls Church Transit Station, particularly land unit "E". The intention of the Transit Area designation is to capitalize on the opportunity to provide transit focused housing employment locations, while still maintaining the existing, nearby land uses.

Land Unit "E" is characterized as a stable, residential community that is planned at a density of R-4, which is the existing zoning of the parcel. Since less than half of the allowable FAR of 0.35 is utilized (the existing FAR is 0.18), expansion of the existing facilities in the future is not likely restricted due to FAR limitations. The Comprehensive Plan does encourage special efforts to provide pedestrian amenities which would allow access to Metro.

A copy of the County's Comprehensive Plan language for the area around the West Falls Church Transit Station is included as an attachment to this report.

### **Site Utilities**

#### **Water**

Service is provided by Falls Church Department of Public Utilities. An existing 6" water main enters the site at the southwest corner from Oak Street (Route 1746) and wraps around the western portion of the existing building and exits the site at the northwest corner. An existing fire hydrant offsite along Oak Street provides fire coverage for the existing building. An additional fire hydrant located to the northeast of the site taps off the 6" water main in Woodland Drive.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Mount Daniel Elementary School

---

A 4" domestic connection is located on the side south of the existing building and taps off the existing 6" water main that enters the site at the southwest corner. The 4" line continues east and reduces to a 2" line that connects to the southwest side of the building. A 4" fire line tees off the onsite 6" line that wraps around the west side of the existing building. It is anticipated that these connections can be maintained with construction of any expansion of the current facilities.

#### **Sanitary Sewer**

Existing service is provided by the City of Falls Church Department of Environmental Services. An existing 8" terracotta sanitary sewer located in Oak Street enters the south west corner of the site and connects to the south of the building. Additionally, a 4" sanitary sewer lateral connection on the southwest side of the building ties into the 8" terracotta sewer line. An existing 8" DIP sanitary sewer enters the site from Oak Street. This line provides service for two 4" DIP connections at the southeast side of the existing building. There are no known inadequacies of the existing sewer line. It is anticipated that the existing sanitary sewer lateral can be maintained with any expansion of the current facilities.

#### **Storm Drainage**

Two existing storm sewer systems provide outfall for the project site. An existing 18" storm sewer outfall is located in Woodland Drive right-of-way at the northeast corner of the site. An existing 15" storm sewer outfall is located at the Highland Avenue right-of-way to the west of the site. Adequacy of these storm sewer systems will be verified upon any expansion of the current facilities. Offsite improvements to these storm sewer systems are not presently anticipated.

The existing storm drainage system on the northwest side of the existing building will need to be reworked if the northwest corner of the building is to be expanded. Where possible, the existing stormwater management box culverts shall be maintained to address a portion of the overall storm water management requirements.

#### **Storm Water Management**

The site improvements (addition to the existing school building and parking expansion) addressed the minimum stormwater management requirements as mandated by the Fairfax County Public Facilities Manual. Stormwater management peak flow reduction requirements (detention) mandate that the 2-year and 10-year peak flow from the site be reduced at or below the existing peak flow for these recurrence interval storms. Water quality requirements or Best Management Practices (BMP's) require a 40% phosphorous removal rate (unless the site development qualifies for re-development with an increase of impervious area less than 20% of the existing impervious area of the site).

The site currently addresses Best Management Practices (BMP's) by reducing the phosphorus loads by two different methods:

- dedication of natural open space (Water Quality Management Area)
- utilization of two Filterra units

The Filterra units and dedicated open space meet the 40% requirement with no excess capacity. Stormwater detention requirements were met with the use of two underground, privately maintained detention structures. These structures consist of standard box culverts, a minimum of six feet in height with a weirwall at the lower end to regulate the release of storm flows.

Any proposed addition to the site that requires a site permit and generates additional impervious area on site will be subject to the storm water management requirements as identified within the Fairfax County Public Facilities Manual (PFM). Where possible, the existing stormwater management box culverts located to the northwest and east of the school should be maintained to address the stormwater detention requirement. Additional onsite measures will be required to address peak flow detention, beyond that which can be accommodated in the stormwater management box culverts. Any addition to the site that requires a site permit with a net increase of impervious area will also require BMP's. If the net increase of impervious area less is less than 20%, then the redevelopment formula can be utilized for computing the BMP requirement which may afford a reduction of phosphorous load of less than 40%:

$$[1 - 0.9(I_{pre}/I_{post})] \times 100\% = \% P \text{ Removal}$$

In order to address the BMP requirement for the site, the following measures may be incorporated:

- utilization of percolation trenches within proposed parking areas to promote infiltration
- utilization of a bioretention filter to promote infiltration
- dedication of natural open space (Water Quality Management Area)
- consideration of green roof elements to promote infiltration.

Verification of the infiltration capacity of the onsite soils is required to analyze the design requirements. The Water Quality Management Area (Conservation Areas) recorded with the most recent site improvements must be preserved with future development of the site, unless the express written permission of the Director of the Fairfax County Department of Public Works and Environmental Services is obtained.

### **Environmental Assessment**

#### **Floodplains**

Based on the Fairfax County Chesapeake Bay Preservation Map there are no identified 100-year floodplains in the vicinity of the lots that comprise the Mount Daniel Elementary Site.

# Falls Church City Public Schools

## Facility Master Plan



Facility Evaluations – Mount Daniel Elementary School

---

### Resource Protection Areas

Resource Protection Area (RPA) is the component of the Chesapeake Bay Preservation Area comprised of lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. RPA's shall include any land characterized by the following features:

- A tidal wetland
- A tidal shore
- A water body with perennial flow
- A nontidal wetland connected by surface flow and contiguous to a tidal wetland or a water body with perennial flow
- A buffer area as follows
  - Any land with a major floodplain
  - Any land within 100 feet within an RPA feature

RPAs cannot be cleared without special permitting.

Based on the Fairfax County Chesapeake Bay Preservation Map, there are no identified RPAs within the lots that comprise the Mount Daniel Elementary School.

### Wetlands

There were no identified wetland areas on the site plan for the Mount Daniel Elementary School. The site should be field inspected to confirm that the area that will be impacted with construction of any proposed expansion is void of jurisdictional wetlands. If wetlands are identified, they will be field confirmed by the USACE and the Virginia Department of Environmental Quality (DEQ), surveyed and reflected on a Jurisdictional Determination (JD) that is approved by the USACE. Disturbance of any wetlands, if identified, will be avoided to the extent possible with site construction.

### Architectural Assessment

Mount Daniel Elementary School was built in the time period of 1955 with an addition **completed** in 2005. The building consists of the following:

Upper Floor:	39,701 SF
Lower Floor:	2,960 SF
Total:	42,661 SF

The main entrance to the school is on the south side of the site, at an elevation of 10' above sidewalk grade and is not accessible by wheel chair. A disabled person must enter the school at grade level at another entrance next to the multi-purpose room and can only gain access to the classrooms by using a corridor ramp of more than 50' long without intermediate landings.

Finishes are typically 2' by 4' suspended, lay-in, acoustical tile ceilings, painted masonry partitions with carpeted floors.

The school is arranged along a central main corridor. The main corridor ramp length is longer than the 30' limit set by ADA standards. The handrails of the east side entrance stair leading to the playground are also not compatible with ADA code for continuity. Doors to the old classrooms don't have enough clearance width for the disabled. A few drinking fountains are currently at a mounting height for adults, not for kindergarten children.

### **Classrooms:**

There are 15 classrooms. Room sizes average 860 SF. Also there are 2 classroom trailers on the north side or back of the school.

### **Type of Construction:**

This building consists of steel frame and face brick on concrete masonry unit back-up. The exterior walls are currently in ....shape. Window systems consist of... The roof consists of membrane roofing over rigid insulation on low slope roofs.

### **User Group and Construction Type:**

The building is mixed-use of Groups E (Educational), A-3 (Gymnasium) and B (Office)  
The construction type is 2B

## **Mechanical, Plumbing, Electrical, Life Safety Assessment**

### **Mechanical (HVAC)**

The original building HVAC system consists of approximately 17 vertical type, floor mounted water source heat pump units and 4 roof mounted outdoor roof top type water source heat pump units. The units serve the classrooms, offices and corridors and range from ½ to 5 tons in capacity. The roof top heat pump unit serving the multipurpose room, gymnasium/auditorium space is a 20 ton capacity unit. All of the equipment was installed as part of a 1988 addition and alterations project.

The new 2005 building addition HVAC system consists of self-contained roof top A/C units with gas heat. The addition has electric unit heaters for supplemental heating.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Mount Daniel Elementary School

---

The heat pump units are served by a closed loop, un-insulated piping system with a water to water, plate and frame type heat exchanger and a 255 GPM capacity, end-suction circulating pump located in the Central Plant on the lower level of the East Wing.

Hot water for heating the closed loop is provided by a 240 KW electric boiler totaling 810 MBH in capacity. .

Heat rejection for the closed loop system is provided by a 95 ton capacity forced draft, BAC Model VXT 95 cooling tower located on grade. The original tower was replaced in 2007. Condenser water within the open loop piping system connecting the cooling tower to the heat exchanger is circulated by a 255 GPM capacity, end-suction, circulating pump. The plant has a third circulating pump which serves as a stand-by for both the closed loop system and the condenser water system.

The heat pump units are controlled by a space thermostat and started and stopped from a Central Timed Control Center. The boilers, cooling tower and pumps are controlled by a Central Temperature Control and Alarm Panel in the Central Plant.

The vertical heat pump units serving the class room are located in the mechanical rooms, which are located on the perimeter of the building or water closets. Ventilation air is provided thru louvered wall opening with motorized damper and is non-ducted. The room/closet is treated as a return air plenum.

The heat pump units and all equipment in the control plant appear to be well maintained and in good shape. The control system is adequate; however, there is no remote monitoring to alert staff of equipment failure or monitor temperature conditions in various areas of the building.

### **Plumbing Systems**

The original building has a 3” domestic water service which enters the building in a dry storage room off the kitchen. The main shut off valve is in a storage room on the first floor. There is no meter or back-flow prevention device inside the building.

Domestic hot water is generated by a (2) 85 gallon, 12 KW electric storage type water heaters located in the Kitchen. The water heaters were installed in 1988 as part of a Kitchen Renovation.

The water piping for both hot and cold water is copper with soldered joints and is insulated. The sanitary sewer and storm water piping is cast iron with bell and spigot hubs on original systems and no-hub type fitting on renovated areas and the 2005 addition. The toilet fixtures and associated faucets, flush valves, etc. appear to be original. Minimal ADA upgrades have been made but tempered water is not currently provided for all lavatories and hand sinks.

Roof drainage is provided via roof drains with internal storm water piping and by exterior gutters with down spouts. The down spouts are connected to cast iron boots which are piped to the site storm water system.

The kitchen sanitary system has a grease trap located outside below grade.

The 2005 addition has a separate 2" domestic water service to handle the new plumbing fixtures and toilets in the addition. Sanitary and vent piping and cast iron no-hub and PVC were allowed by code. Roof drainage is by exposed gutters with downspouts connected to underground storm water system. Systems are new and in excellent condition

Natural gas is provided to the 2005 addition at 0.5 psi pressure and serves the roof top units. The gas service is located outside. The original building is currently 'total electric' after the gas service was removed during the 1988 renovation.

### **Fire Protection Systems**

The original building does not have a sprinkler system. A "limited-area" type sprinkler system is provided for storage rooms on the first floor and storage in the kitchen area. The "limited-area" system is connected to the domestic water system and is monitored.

The 2005 addition has a wet-pipe sprinkler system and is served by a 4" fire service. The fire service is equipped with an in-line fire pump.

### **Electrical Systems**

#### **A. Electrical Service**

The existing power company is Dominion Virginia Power. The electric service is provided through a power company step down pad mounted transformer. This service enters the building at a dedicated electrical room. This electrical service was last upgraded in 1989. The power company electric meter is installed inside on the wall of the main electrical room. The existing power company pad mounted transformer is feeding 120/208 volt, 1600 amp. The existing switchboard is a General Electric (GE). The switchboard utilizes fused switches instead of circuit breakers. There are five sections to this switchgear which include a CT/pull section, 1600A main service disconnect and a three distribution sections. This switchboard has no space left for expansion. The service size of 1600A, 120/208 volt is too small for a school needing to meet current electrical demands.

The existing switchboard does not contain any ground fault protection as per current code requirements. The existing switchboard does not contain any transient voltage surge suppression. The facilities supervisor noted that any brownout or power outage will require facilities personnel to reset the mains. This is typically not an acceptable situation for a school.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Mount Daniel Elementary School

---

There is a separate electrical service for remote trailers.

A fire pump was added in 2005 and a separate electrical service was installed for this equipment. This meets national electrical code requirements.

#### B. Power Distribution System

The base building was renovated in 1989 and a new addition was added in 2005. The base building has GE panels that are filled to capacity. The electric closets are scattered throughout the base school. All of the existing electrical rooms are filled to capacity. No additional equipment can be added and still meet the working clearance requirements.

The new addition has two new panelboards that are fed from the GE main switchboard. These are surface mounted panels and were placed in staff room #44.

#### C. Emergency Power Distribution System

This school does not have an emergency generator. Emergency lighting is by battery packs in individual fixtures.

#### D. Lighting System

All of the lighting fixtures in the new addition are recessed fluorescent. The fluorescent lights utilize T8 technology and are energy efficient. The lighting fixtures are clean and in good condition. The lighting levels throughout the school are good. Exit lights utilize LED lamps.

In the base building most of the lighting fixtures were replaced in 1989. Existing lighting fixtures in classroom, classrooms, offices and corridors are 2' X 4' recessed fluorescent. The fluorescent lights utilize T12 technology which is old and not energy efficient. The lighting level in classrooms is poor. The corridor has recently been upgraded with the addition of surface wall mount light fixtures in addition to the recessed fixtures noted above. Exit lights utilize fluorescent lamps. Their appearance is old and discolored.

In the new addition, switching control is through motion sensor switches and meets the current energy efficiency code requirements. In the base building switching control is through single toggle switches throughout the building with a few motion sensor switches. This does not meet the current energy efficiency code requirements.

The exterior lighting at the new addition is adequate. At the base building, there are some exit discharge locations that do not have sufficient emergency egress lighting. Some of the exterior lights have clearly been replaced as the existing fixtures that have not been replaced are old, discolored and some are damaged.

**E. Power Outlets**

In the base building, current power requirements require more receptacles and circuits. Because of increased requirements surface mounted conduit and receptacles have been added in offices and classrooms.

**F. Fire Alarm System**

The new addition has a new fire alarm system which is an Edwards EST-2 system. The control panel is located in staff room #44. The fire alarm devices in the new addition are new. There is a new graphic annunciator in the new addition which is a graphic depiction of the new addition only. It does not include the base building. Notification is delivered through horns and strobes.

The base building has a fire alarm system which was installed in 1989. It is an Edwards system. The existing fire alarm control panel is located in the main office. Notification is delivered through bells and flashing lights. These devices are not ADA compliant, nor do devices meet spacing requirements per current code requirements. This is a non-addressable system which means it works on a different and older technology than the new panel.

**G. Sound System**

The existing sound system console manufactured by Dukane is located in the main office. Booster panels are installed throughout the facility. The existing sound system main equipment was installed in 1989. The classrooms have recessed mounted speakers and call back switches. Corridors and cafeteria have recessed mounted speakers.

Some of the individual classrooms have sound reinforcing systems.

**H Telephone/ CATV and Intercommunications Systems**

The existing main CATV HUB is located in the existing communication room. The existing telecommunication main HUB is located in the existing communications room. There are no dedicated rooms for telephone and data equipment. This equipment is installed in various workrooms throughout the school. There is no capacity for expansion unless more work space is taken. All the existing telephone/data outlets are surface mounted in the base building. Most of the classrooms have one telephone and one data outlet, but some classrooms have one telephone and two data outlets in the base building. There are computer data repeaters installed throughout the facility in corridors surface mounted on walls. These do not provide for a clean and neat installation and are prone to damage based on their location.

**I Master Clock and Program Bell System**

The master clock system is integral with the Dukane sound system located in the main office.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Mount Daniel Elementary School

---

#### K. Building Security System

The school is equipped with a partial access control and closed caption television (CCTV) security system. The system is web based with control panels in various locations. There are card readers at some entrances and security cameras located in corridors and at exterior exits. There is a video monitoring station in the school.

#### **Hazardous Materials Assessment**

F&R surveyed Mt. Daniel Elementary School to identify ACM, LBP and suspect PCB and mercury containing equipment utilizing non-destructive sampling. The following paragraphs summarize their findings:

- F&R identified asbestos-containing pipe insulation in Classrooms 2 and 7 and the adjoining hallway.
- F&R identified asbestos-containing cementitious panels on portions of the roof soffit.
- F&R observed suspect asbestos-containing metal fire doors located throughout the school.
- F&R observed water fountains with suspect asbestos-containing pipe wrap throughout the school.
- F&R identified lead based paint on exterior building components.
- F&R observed mercury-containing thermostats throughout the school.
- F&R visually inspected fluorescent light fixtures throughout the school. Based on our inspection, there does not appear to be any regulated hazardous materials within these light fixtures.

#### **Asbestos-Containing Material**

During F&R's non-destructive survey for ACM the following materials were sampled: pipe insulation, vinyl floor tile and associated mastic, vinyl covebase mastic, carpet mastic, blackboard mastic, cementitious panels, expansion joint caulk, ceiling tile, drywall and associated joint compound, wall plaster and duct seam sealant. The following materials were determined to be asbestos-containing: pipe insulation and cementitious panels. The following materials were assumed to be asbestos-containing: metal fire doors, and water fountain pipe wrap.

F&R identified approximately 75 linear feet of asbestos-containing pipe insulation above the drop ceiling in Classrooms 2 and 7 and the adjoining hallway. This material was observed in a fair condition at the time of the survey. For the purposes of this study, F&R assumes that approximately 500 linear feet of asbestos-containing pipe insulation is located above solid walls and ceilings and within pipe chases throughout the school. Approximately 1,000 square feet of asbestos-containing cementitious panels were observed on the school's roof soffit. The material was observed in a fair condition at the time of the survey. 38 metal fire doors, presumed to be asbestos-containing were observed throughout the school during F&R's survey. The metal fire doors were observed in good condition. Approximately 6 water fountains were identified by F&R that are presumed to contain asbestos-containing pipe wrap.

---

The water fountain pipe wrap was inaccessible at the time of the survey.

As part of this study, F&R reviewed an Asbestos Management Plan for the school, prepared by Professional Service Industries, Inc. (PSI) and dated May 30, 1992. The PSI report did not identify any ACM within the school.

F&R recommends that all of the identified ACM be removed by a Commonwealth of Virginia licensed asbestos abatement contractor prior to impact by renovation or demolition activities. Furthermore, all suspect ACM that has not been previously sampled should be analyzed for asbestos prior to impact by renovation or demolition activities. Additionally, F&R recommends that the 1992 Asbestos Management Plan be updated as the Asbestos Hazard Emergency Response Act (AHERA) requires that these plans be updated every three years.

### **Lead Based Paint**

F&R conducted a LBP screening of the painted surfaces located throughout the interior and exterior of Mount Daniel Elementary School. LBP was identified on the following exterior building components: white cementitious panels (also identified as ACM) on the roof soffit and brown wood window panels located in the rear exterior of the building. No lead based paint was identified on the interior of the building. Since this was a limited LBP survey, additional LBP surfaces may be present that were not tested. All painted surfaces should be assumed to contain LBP or lead-containing paint.

In general, if structures are to be removed or demolished, typical demolition techniques can be used without lead based paint becoming an issue of concern. However, if building components containing lead based paint are to be stripped and repainted, precautions would need to be taken. Specifically, if these building components are to be sanded, abraded or heated to remove the lead based paint, workers trained in lead based paint removal should be contracted for the work.

The “Lead: Renovation, Repair and Painting Program” rule, which will take effect in April 2010 will require that contractors involved in renovation, repair or painting activities in buildings constructed prior to 1978 in which children under the age of 6 are present take special precautions to avoid creating a lead hazard. These precautions include posting warning signs; restricting occupants from work areas; containing work areas to prevent dust and debris from spreading; conducting a thorough cleanup and verification that cleanup was effective. Should renovations that disturb LBP take place once this regulation takes effect, there will be a cost associated with renovating these building components. At this time F&R believes that the presence of LBP will have only minimal impact to the project, primarily with contractor compliance with current OSHA regulations.

### **Mercury-Containing Equipment**

F&R identified 20 thermostats that contained mercury-containing switches. These thermostats were observed throughout the building. Fluorescent light tubes were also inspected for the presence of mercury. All of the fluorescent light tubes observed by F&R contained the low-mercury symbol, indicating that they do not contain regulated levels of mercury. Based upon F&R’s observations it appears that there are no fluorescent light tubes within the school with regulated levels of mercury.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Mount Daniel Elementary School

---

#### PCB-Containing Equipment

F&R visually surveyed a representative number of light ballasts throughout Mount Daniel Elementary School. All of the light ballasts observed contained the “No PCB” label and therefore PCB-containing ballasts are not likely a concern at this property; however some PCB-containing ballasts may still remain within the school. No other potential PCB-containing equipment was observed by F&R.

#### Cost Estimates

F&R has developed conceptual cost estimates for the abatement of hazardous materials associated with major and minor renovations at Mount Daniel Elementary School. F&R is assuming that no work is to be conducted on the roof.

##### “Minor Renovation” Cost Estimate

- Cementitious Panels – Approximately 1,000 square feet of asbestos-containing cementitious panels were observed on the roof soffit. F&R assumes a cost of approximately \$3.00 per square foot for abatement of the cementitious panels for a total cost of \$3,000.
- Metal Fire Doors – 38 presumed asbestos-containing metal fire doors were observed throughout the school. F&R assumes a cost of approximately \$100.00 per door for abatement of the metal fire doors for a total cost of \$3,800.
- Lead Based Paint – F&R assumes that structures containing LBP can be renovated or demolished utilizing typical demolition techniques without LBP becoming an issue of concern if renovation work impacting LBP occurs before April 2010, when the “Lead: Renovation, Repair and Painting Program” takes effect. For renovation work that impacts LBP which occurs after this date, F&R assumes a cost of approximately \$5,000 for special precautions that will need to be taken.

The total estimated cost for the removal of identified and suspected hazardous materials associated with a minor renovation at Mount Daniel Elementary School is \$11,800. F&R typically adds an additional 25% contingency fee to estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated to be 15 to 25% of the abatement costs. The total estimated costs to remove the identified and suspected hazardous materials associated with a minor renovation at Mount Daniel Elementary School, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$18,438.

##### “Major Renovation” Cost Estimate (Estimate also includes abatement of the hazardous materials referenced in the “minor renovation” cost estimate section)

- Pipe Insulation – F&R assumes that approximately 500 linear feet of pipe insulation exists within pipe chases and behind solid walls and ceilings. F&R assumes a cost of approximately \$25.00 per linear foot for abatement of the pipe insulation for a total cost of \$12,500.
- Water Fountain Pipe Wrap – Approximately 6 water fountains presumed to contain asbestos-

containing pipe wrap were observed throughout the school. F&R assumes an abatement cost of \$250.00 per water fountain for a total cost of \$1,500.

- Mercury-Containing Thermostats – F&R observed 20 mercury-containing thermostats throughout the school. F&R assumes that removal of the thermostats will cost approximately \$3,000.

The total estimated cost for the removal of identified and suspected hazardous materials associated with a major renovation at Mount Daniel Elementary School is \$28,800. F&R typically adds an additional 25% contingency fee to estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated to be 15 to 25% of the abatement costs. The total estimated costs to remove the identified and suspected hazardous materials associated with a major renovation at Mount Daniel Elementary School, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$45,000.

# Falls Church City Public Schools Facility Master Plan



Facility Evaluations – Mount Daniel Elementary School

---



## **Thomas Jefferson Elementary School**

### **Site Description**

The Thomas Jefferson Elementary School is located in the City of Falls Church on City Tax Map Parcels 50-2. The parcel is zoned R-1A low density residential. The total site acreage is 5.83 acres. The school is bounded by Seaton Lane to the south and South Oak Street to the northwest. Site access is from Seaton Lane.

Based on an approximate measurement, the building area occupied by the existing school is 37,000 SF. A total of 38 surface parking spaces are provided, of which 2 spaces are accessible and designated for handicap parking.

### **Zoning Requirements**

#### **Maximum Building Coverage**

The R-1A zoned property may be developed with a public use to a maximum building coverage of 30%. Therefore, the maximum allowable building footprint area is 76,199 square feet.

#### **Yard Requirements/Setbacks**

In the R-1A zoning district the maximum building height for public uses is 45' with no more than 3 stories. The minimum yard requirements include:

Front yard:	Not less than 30'
Side yard:	Not less than 25'
Rear yard:	Not less than 40'

#### **Landscaping/Screening Requirement**

The proposed expansion of the development program on the subject property must comply with the applicable provisions set forth in Article IV of the City of Falls Church Zoning Ordinance. The requirements include:

Interior Parking Lot Landscaping	No Requirement
Peripheral Parking Lot Landscaping	No Requirement
Tree Cover	20%
Open Space	No Requirement

# Falls Church City Public Schools

## Facility Master Plan



Facility Evaluations – Thomas Jefferson Elementary School

---

### Transitional Screening/Barrier

North Property Line	No Requirement
East Property Line	No Requirement
South Property Line	No Requirement
West Property Line	No Requirement

### Parking Requirements

The requirement as set forth in Article IV of the City of Falls Church Zoning Ordinance reads as follows for “Public Elementary School”: One parking space for each teacher, employee or administrator whether full or part-time, plus one for every ten students of maximum enrollment or capacity. Based on this requirement, the minimum number of parking spaces will be determined by the number of employees and the maximum number of students attending classes at any one time.

The parking totals reflected on the most recently approved site plan for the elementary school reflects the following:

Elementary School	25 Staff/400Students
Required Parking	1 Space/Staff + 1 Space/10 Students
Required Parking	65 Spaces
Total Required Parking	65 Spaces
Total Provided Parking	38 Spaces
Total H/C Parking Required	2 Spaces
Total H/C Parking Provided	2 Spaces
Total H/C Van Parking Required	2 Spaces
Total H/C Van Parking Provided	2Spaces

Existing parking areas are asphalt paved and constructed in accordance with VDOT/Fairfax County specifications. The following standard pavement section was utilized for recently paved asphalt parking areas:

Top Course:	2” Asphalt Surface Course SM-9.5A
Intermediate:	3” Asphalt Base Course BM-25.0
Base:	6” Aggregate Material Type 21B

## **Site Utilities**

### **Water**

Service is provided by the Falls Church Department of Public Utilities. An existing 6" water main is located in Seaton Lane, south of the project site. An existing 16" water main that runs along South Oak Street enters the parcel on the north side of the site. The 16" line continues along South Oak Street and exits the site at the northeast corner. Two fire hydrants are located on the 16" line; one on the north side of South Oak Street at the northwest corner of the site and the other at the northeast corner of the site. An additional fire hydrant may need to be installed if the two existing fire hydrant locations do not provide adequate fire coverage for the expanded facility.

### **Sanitary Sewer**

Sanitary sewer is provided by the Falls Church Department of Public Utilities. There are no known capacity issues.

## **Site Access**

The main access to the site is located at the intersection of Seaton Lane and West Greenway Boulevard. Additionally, access to the parking lot south of the building is provided off of Seaton Lane. It is anticipated that the entrances will be maintained. Sight distance for the existing entrances will be confirmed with the final site plan.

The following standard pavement section is assumed for new asphalt access roads and travel aisles within the parking areas:

Top Course:	1.5" Asphalt Surface Course SM-9.5A
Intermediate:	4" Asphalt Base Course BM-25.0
Base:	8" Aggregate Material Type 21B

## **Environmental**

### **Floodplains**

Based on the City of Falls Church Mapping System, the project site encompasses an existing stream, Tripps Run, which flows north to south on the eastern portion of the site. The 100-year floodplain for Tripps Run take up nearly half of the parcel area and the limits are located approximately 15' away from the existing buildings.

## **Resource Protection Areas**

Resource Protection Area (RPA) is the component of the Chesapeake Bay Preservation Area comprised of lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. RPA's shall include any land characterized by the following features:

- A tidal wetland
- A tidal shore
- A water body with perennial flow
- A nontidal wetland connected by surface flow and contiguous to a tidal wetland or a water body with perennial flow
- A buffer area as follows
  - Any land with a major floodplain
  - Any land within 100 feet within an RPA feature

RPAs cannot be cleared without special permitting.

Based on the City of Falls Church Mapping System, the project site encompasses an existing stream, Tripp Run, which flows north to south on the eastern portion of the site. Limits of the RPA for Tripps Run are located approximately 100' from the stream and are within the 100-year floodplain limits.

## **Wetlands**

There were no identified wetland areas on the site plan for the Middle School. The site should be field inspected to confirm that the area that will be impacted with construction of any proposed expansion is void of jurisdictional wetlands. If wetlands are identified, they will be field confirmed by the USACE and the Virginia Department of Environmental Quality (DEQ), surveyed and reflected on a Jurisdictional Determination (JD) that is approved by the USACE. Disturbance of any wetlands, if identified, will be avoided to the extent possible with site construction.

## **Architectural Assessment**

Thomas Jefferson Elementary School was built in the 1940's with a major addition completed in 1990. The school has 3 floors of different footprints, with a total area of 60,919 SF.

Steps leading to the main entrance on the second floor are located on the west side (or front) of the school and are not ADA-compliant. A disabled person or a person in a wheel chair must enter the school on the first floor at the drop-off area on the east side (or back) of the building and use the elevator to the upper floors. The main office and classrooms are on the second floor. 8 additional classrooms are on the third floor. All special classes and services are located on the first floor (or lower level).

Finishes for the building include carpeted floors (through most of the building), walls, 2' by 4', and suspended, lay-in acoustical tile ceilings which are typically ...in height.

In general the building is compliant with building codes, except a few instances where changes are needed to meet ADA requirements. These changes include a ramp to the main entrance, stair handrails, and ...

### **Classrooms:**

There are 21 classrooms and 7 trailers. Current enrollment is 420 students.

### **Type of Construction:**

Construction consists of steel frame and face brick on concrete with masonry unit back-up. Window systems consist of ... The roof system is comprised of ... All the exterior materials are in ...shape.

### **User Group and Construction Type:**

The building is mixed-use of Groups E (Educational), A-3 (Gymnasium) and B (Office). The construction type is 2B Protected

## **Mechanical, Plumbing, Electrical, Life Safety Assessment**

### **Mechanical (HVAC)**

The building HVAC systems consist of approximately 53 horizontal type, ceiling mounted water source heat pump units and 6 floor mounted console type water source heat pump units. These units serve the classrooms, offices and corridors and range from ½ to 5 tons in capacity. Thirteen (13) of the units were installed as part of the 1990 addition and the rest were installed as part of a 1995 HVAC replacement project.

In addition the Administration Area, Library and Gymnasium are served by self-contained roof top A/C units with gas heat, which were installed in 1995. The kitchen has a heating and ventilating unit with electric heat, installed as part of a 1979 renovation project.

The heat pump units are served by a closed loop, un-insulated piping system with a water to water, plate and frame type heat exchanger and 475 GPM capacity, end-suction circulating pump located in the Central Plant on the first floor.

# Falls Church City Public Schools

## Facility Master Plan



Facility Evaluations – Thomas Jefferson Elementary School

---

Hot water for heating the closed loop is provided by four (4) gas-fired high-efficiency condensing type boilers totaling 2100 MBH in capacity. Two (2) 300 MBH boilers were installed in 1990 and two (2) 750 MBH boilers were installed in 1995 when the plant was completely replaced. There are two (2) 156 GPM capacity circulating pumps (one stand-by) with hot water piping connections to the closed loop.

Heat rejection for the closed loop system is provided by a 160 ton capacity forced draft, low profile BAC cooling tower located on grade. Condenser water within the open loop piping system connecting the cooling tower to the heat exchanger is circulated by a 475 GPM capacity, end-suction, circulating pump. The plant has a third circulating pump which serves as a stand-by for both the closed loop system and the condenser water system.

The heat pump units are controlled by a space thermostat and started and stopped from a Central Timed Control Center. The boilers, cooling tower and pumps are controlled by a Central Temperature Control and Alarm Panel in the Central Plant.

Ventilation air for the ceiling mounted heat pump units is ducted from wall louvers and/or roof mounted intake air units. The ventilation air is untempered and the heat pump units must heat and cool the ventilation air. The console type heat pump units have a wall louver used to obtain ventilation air.

The heat pump units, roof top units and all equipment in the control plant appear to be well maintained and in good shape. The control system is adequate; however, there is no remote monitoring to alert staff of equipment failure or monitor temperature conditions in various areas of the building.

### Plumbing Systems

The building has a 2½” domestic water service which enters the building on the right side of the main entrance. The main shut off valve is in a storage room on the first floor. There is no meter or back-flow prevention device inside the building. Our investigation could not locate a utility vault outside.

Domestic hot water is generated by a 500 gallon, 63 KW electric storage type water heater located in the Maintenance Office adjacent to the Main Electric Room and Kitchen. The water heater was installed in 1979 as part of a Kitchen Renovation when the building was an all electric facility and is in poor condition.

The water piping for both hot and cold water is copper with soldered joints and is insulated. The sanitary sewer and storm water piping is cast iron with bell and spigot hubs on original systems and no-hub type fitting on renovated areas and the 1990 addition. The kitchen sanitary system has a grease trap located outside below grade.

The toilet fixtures and associated faucets, flush valves, etc. appear to be original. Minimal ADA upgrades have been made but tempered water is not currently provided for all lavatories and hand sinks.

Roof drainage is provided via roof drains with internal storm water piping and by exterior gutters with down spouts. The down spouts are connected to cast iron boots which are piped to the site storm water system.

Natural gas is provided to the building at 2 psi pressure and serves the boilers, roof top units and the kitchen cooking equipment. The gas service enters the Central Plant with meter and regulator located outside.

### **Fire Protection Systems**

The building does not have a sprinkler system. A “limited-area” type sprinkler system is provided for storage rooms on the first floor and storage in the kitchen area. The “limited-area” system is connected to the domestic water system and is monitored.

### **Electrical Systems**

#### **A. Electrical Service**

The existing power company is Dominion Virginia Power. The electric service is provided through a power company step down pad mounted transformer. This service enters the building at a dedicated electrical room. This electrical service was last upgraded in 1979. The power company electric meter is installed inside on the wall of the main electrical room. The existing power company pad mounted transformer is feeding 277/480 volt, 1600 amp. The existing switchboard is Federal Pacific Electric Co. (FPE). FPE has been out of business for over 25 years and parts will be difficult to find for any future renovations. There are two sections to this switchgear which include a 1600A main service disconnect and combination distribution section and a separate distribution section. This switchboard has no space left for expansion. The service size of 1600A, 480/277 volt is too small for a school needing to meet current electrical demands.

The existing switchboard does not contain any ground fault protection as per current code requirements. The existing switchboard does not contain any transient voltage surge suppression.

There is a separate electrical service for remote trailers.

#### **B. Power Distribution System**

The existing switchboard serves the entire building through a number of branch circuit panelboards. Approximately half of the panels are FPE. These panels will be difficult to find parts for any future renovations. The other half of the panels are a combination of GE and Square-D. These panels were added for later renovations and do have a few spare breakers that could be utilized for small future changes.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Thomas Jefferson Elementary School

---

Electric closets are scattered throughout the school. All of the existing electrical rooms are filled to capacity. No additional equipment can be added and still meet the working clearance requirements.

#### C. Emergency Power Distribution System

The building has an ONAN generator. The generator is rated at 60kW, 480/277 volt, 3-Phase and has a 90A in-line circuit breaker. The generator has a remote double fuel tank located adjacent to the generator location and sits on a concrete pad. The generator operates on diesel gas. The existing generator was installed during 1979 renovation. The existing generator is located outside of the electrical room. The emergency system is operational but reaching the end of its useful life.

The emergency generator feeds an ONAN automatic transfer switch "ATS" which further feeds to panel EE which contains a 100A main circuit breaker. This equipment is located in the main electric room. The existing automatic transfer switch and emergency panel were also installed in 1979. The panel is FPE and the transfer switch is approaching the end of its useful life. The emergency system serves emergency lights, exit lights, fire alarm system, CATV system, sound system and telephone/communication. In addition, the generator feeds the elevator sump.

#### D. Lighting System

Most of the lighting fixtures were replaced in 1979 with some upgrades over the years. Existing lighting fixtures in classroom, classrooms, offices and corridors are 2' X 4' recessed fluorescent. The fluorescent lights utilize T12 technology which is old and not energy efficient. The existing lighting fixtures in the bathrooms are incandescent. The lighting level in classrooms, corridors, and gymnasium is poor. The light fixtures in the cafeteria are surface mounted. Storage room lights are surface mounted and several are damaged.

Switching control is through single toggle switches throughout the building with a few motion sensor switches. This does not meet the current energy efficiency code requirements.

There are some exit discharge locations that do not have sufficient emergency egress lighting. The building lacks proper security lighting around the perimeter of the building. Some of the exterior lights have clearly been replaced as the existing fixtures that have not been replaced are old, discolored and some are damaged. Some exterior flood lights were added on the roof to shine down on walkways for security lighting.

#### E. Power Outlets

The power outlets located in the classrooms and offices were provided in 1979. Current power requirements require more receptacles and circuits. Because of increased requirements surface mounted conduit and receptacles have been added in offices and classrooms.

#### F. Fire Alarm System

The existing fire alarm system is a Simplex 4010 system. The control panel and devices were installed in 2001. The existing fire alarm control panel is located in the main office. The building is not fully sprinklered. There are a few limited area sprinkler systems with flow switches that tie back to the fire alarm system. There are pull stations at all of the exits. The entire school has audio/visual notification devices throughout. Notification is delivered through horns and strobes. The annunciator at the main entrance is a LCD type annunciator.

G. Sound System

The existing sound system console is manufactured by Rauland and is located in the main office. Booster panels are installed throughout the facility. The existing sound system main equipment was installed in 1979. The classrooms and offices have combination of surface and recessed mounted speakers and call back switches. Corridors have recessed speakers. The system is operable but near the end of its useful life.

H. Telephone/ CATV and Intercommunications Systems

The existing main telephone and CATV HUB is located in the main electrical room. The existing telecommunication main HUB is located in the existing communications room. All the existing telephone/data outlets are surface mounted. Most of the classrooms have one telephone and one data outlet, but some classrooms have one telephone and two data outlets. There are computer data repeaters installed throughout the facility in corridors surface mounted on walls. At some of these locations there are surface mounted data and power outlets and there is an excess of wiring dangling from this equipment. This is a messy installation and are prone to damage based on their location.

There are telephone data closets throughout the facility. These rooms share CATV, telephone punchblocks and backboard and data racks. The rooms are filled to capacity.

I. Master Clock and Program Bell System

There is no master clock system in this facility.

K. Building Security System

The school is equipped with an access control and closed caption television (CCTV) security system. The system is web based with control panels in various locations. There are card readers at each entrance and security cameras located in corridors and at exterior exits. There is a video monitoring station in the school.

# Falls Church City Public Schools

## Facility Master Plan



Facility Evaluations – Thomas Jefferson Elementary School

---

### **Hazardous Materials Assessment**

F&R surveyed Thomas Jefferson Elementary School to identify ACM, LBP and suspect PCB and mercury containing equipment utilizing non-destructive sampling. The following paragraphs summarize the findings:

- F&R observed suspect asbestos-containing metal fire doors located throughout the school.
- F&R observed one elevator suspected to contain asbestos-containing interior and shaft components.
- F&R observed water fountains throughout the school assumed to contain asbestos-containing pipe wrap.
- F&R assumes that asbestos-containing pipe insulation exists behind solid walls and ceilings and within pipe chases throughout the school.
- F&R identified lead based paint throughout the interior and exterior.
- F&R observed mercury-containing thermostats throughout the school.
- F&R visually inspected fluorescent light fixtures throughout the school. Based on our inspection, there does not appear to be any regulated hazardous materials within these light fixtures.

### **Asbestos-Containing Material**

During F&R's non-destructive survey for ACM the following materials were sampled: spray-on fireproofing, ceiling tile, carpet mastic, vinyl covebase mastic, drywall and associated joint compound, floor tile and associated mastic, carpet mastic, wall plaster, window caulk, duct seam sealant, ceiling tile mastic and white pipe seam sealant. All of the materials sampled by F&R were determined to be non asbestos-containing. However, F&R assumed the following materials to be asbestos-containing: metal fire doors, interior elevator/elevator shaft components, water fountain pipe wrap, and pipe insulation behind solid walls and ceilings and behind pipe chases.

F&R observed 23 metal fire doors throughout the school that are presumed to be asbestos-containing. The doors were observed in good condition at the time of the survey. Additionally, F&R assumed that the one elevator located within the school contains interior and shaft components that are asbestos-containing. These materials include elevator brakes, elevator cab insulation, elevator shaft walls and spray-on fireproofing located in the elevator shaft. The interior elevator and shaft components were inaccessible at the time of the survey. F&R observed approximately 10 water fountains throughout the school that are assumed to contain asbestos-containing pipe wrap. The pipe wrap was inaccessible at the time of our inspection. For the purposes of this study, F&R assumes that there is approximately 1,000 linear feet of asbestos-containing pipe insulation within pipe chases and behind solid walls and ceilings, although no asbestos-containing pipe insulation was observed by F&R during our investigation.

As part of this study, F&R reviewed an Asbestos Management Plan for the school, prepared by Professional Service Industries, Inc. (PSI) and dated May 30, 1992. The PSI report did not identify any ACM within the school.

F&R recommends that all of the identified ACM be removed by a Commonwealth of Virginia licensed asbestos abatement contractor prior to impact by renovation or demolition activities. Furthermore, all suspect ACM that has not been previously sampled should be analyzed for asbestos prior to impact by renovation or demolition activities. Additionally, F&R recommends that the 1992 Asbestos Management Plan be updated as the Asbestos Hazard Emergency Response Act (AHERA) requires that these plans be updated every three years.

### **Lead Based Paint**

F&R conducted a LBP screening of the painted surfaces located throughout the interior and exterior of Thomas Jefferson Elementary School. LBP was identified on the following interior building components: white metal pillars located in the kitchen and blue metal door frames located throughout the school. The following exterior building components were identified as containing lead based paint: brown metal pillars throughout the exterior and a black metal overhang located at a rear building entrance adjacent to the playground. Since this was a limited LBP survey additional LBP surfaces may be present that were not tested. All painted surfaces should be assumed to contain LBP or lead-containing paint.

In general, if structures are to be removed or demolished, typical demolition techniques can be used without LBP becoming an issue of concern. However, if building components containing LBP are to be stripped and repainted, precautions would need to be taken. Specifically, if these building components are to be sanded, abraded or heated to remove the LBP, workers trained in LBP removal should be contracted for the work.

The “Lead: Renovation, Repair and Painting Program” rule, which will take effect in April 2010 will require that contractors involved in renovation, repair or painting activities in buildings constructed prior to 1978 in which children under the age of 6 are present take special precautions to avoid creating a lead hazard. These precautions include posting warning signs; restricting occupants from work areas; containing work areas to prevent dust and debris from spreading; conducting a thorough cleanup and verification that cleanup was effective. Should renovations that disturb LBP take place once this regulation takes effect, there will be a cost associated with renovating these building components. At this time F&R believes that the presence of LBP will have only minimal impact to the project, primarily with contractor compliance with current OSHA regulations.

### **Mercury-Containing Equipment**

F&R identified 46 thermostats that contained mercury-containing switches. These thermostats were observed throughout the building. Fluorescent light tubes were also inspected for the presence of mercury. All of the fluorescent light tubes observed by F&R contained the low-mercury symbol, indicating that they do not contain regulated levels of mercury. Based upon F&R’s observations it appears that there are no fluorescent light tubes within the school with regulated levels of mercury.

### **PCB-Containing Equipment**

F&R visually surveyed a representative number of light ballasts throughout Thomas Jefferson Elementary School. All of the light ballasts observed contained the “No PCB” label and therefore PCB-

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Thomas Jefferson Elementary School

---

containing ballasts are likely not a concern at this property, however some PCB-containing ballasts may still remain within the school. No other potential PCB-containing equipment was observed by F&R.

#### Cost Estimates

F&R has developed conceptual cost estimates for the abatement of hazardous materials associated with major and minor renovations at Thomas Jefferson Elementary School. F&R is assuming that no work is to be conducted on the roof.

#### “Minor Renovation” Cost Estimate

- Metal Fire Doors – F&R observed 23 metal fire doors throughout the school that are assumed to be asbestos-containing. F&R assumes an abatement cost of approximately \$100.00 per door for a total abatement cost of \$2,300.
- Lead Based Paint – F&R assumes that structures containing LBP can be renovated or demolished utilizing typical demolition techniques without LBP becoming an issue of concern if renovation work impacting LBP occurs before April 2010, when the “Lead: Renovation, Repair and Painting Program” takes effect. For renovation work that impacts LBP which occurs after this date, F&R assumes a cost of approximately \$10,000 for special precautions that will need to be taken.

The total estimated cost for the removal of the identified and suspected hazardous materials associated with a minor renovation at Thomas Jefferson Elementary School is \$12,300. F&R typically adds an additional 25% contingency fee for estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated to be 15 to 25% of the abatement costs. The total estimated costs to remove the identified and suspected hazardous materials associated with a minor renovation at Thomas Jefferson Elementary School, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$19,219.

#### “Major Renovation” Cost Estimate (Estimate also includes abatement of the hazardous materials referenced in the “minor renovation” cost estimate section)

- Interior Elevator and Elevator Shaft Components – There is one elevator located within the school. F&R assumed that interior components within the elevator and shaft are asbestos-containing. These materials include elevator brakes, elevator cab insulation, elevator shaft walls and spray-on fireproofing located in the elevator shaft. F&R assumes a cost of approximately \$10,000 for abatement of these materials.
- Water Fountain Pipe Wrap – F&R observed approximately 10 water fountains located throughout the school assumed to contain asbestos-containing pipe wrap. F&R assumes an abatement cost of approximately \$250.00 per water fountain for a total abatement cost of \$2,500.
- Pipe Insulation – F&R assumes that approximately 1,000 linear feet of pipe insulation exists within pipe chases and behind solid walls and ceilings. F&R assumes an abatement cost of

approximately \$25.00 per linear foot for a total abatement cost of \$25,000.

- Mercury-Containing Thermostats – F&R observed 46 mercury-containing thermostats throughout the school. F&R assumes that removal of the thermostats will cost \$100.00 each for a total removal cost of \$4,600.

The total estimated cost for the removal of the identified and suspected hazardous materials associated with a major renovation at Thomas Jefferson Elementary School is \$54,400. F&R typically adds an additional 25% contingency fee for estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated to be 15 to 25% of the abatement costs. The total estimated costs to remove the identified and suspected hazardous materials associated with a major renovation at Thomas Jefferson Elementary School, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$85,000.

## **Gage House**

F&R surveyed the property to identify ACM, LBP and suspect PCB and mercury containing equipment utilizing non-destructive sampling. The following paragraphs summarize their findings:

- F&R identified asbestos-containing vibration dampers in the basement and attic.
- F&R identified asbestos-containing pipe insulation debris in the basement.
- F&R identified an asbestos-containing membrane on the 2<sup>nd</sup> floor balcony.
- F&R identified lead based paint on various wooden building components throughout the interior and exterior of the structure.
- F&R observed mercury-containing thermostats in the 1<sup>st</sup> and 2<sup>nd</sup> floor hallways.
- F&R visually inspected the fluorescent light fixtures in the basement. Based on our inspection, there does not appear to be any regulated hazardous materials within these light fixtures.

### **Asbestos-Containing Material**

During F&R's non-destructive survey for ACM the following materials were sampled: linoleum flooring, ceiling tiles, attic insulation, siding and roofing felt, drywall and associated joint compound, window glazing, wall plaster, vibration dampers, pipe insulation and a balcony membrane. The following materials were determined to be asbestos-containing: vibration dampers, pipe insulation and balcony membrane.

F&R identified three asbestos-containing vibration dampers in the basement and attic. This material was observed in fair condition at the time of the survey. Asbestos-containing pipe insulation debris was identified in the basement. The entirety of the material observed by F&R was submitted to the laboratory for analysis. Although F&R did not observe additional pipe insulation at the property, for the purposes of this feasibility study it should be assumed that approximately 250 linear feet of this material exists behind solid walls and ceilings and within pipe chases. Approximately 150 square feet of an asbestos-containing balcony membrane was observed on the 2<sup>nd</sup> floor balcony. This material was observed in poor condition at the time of the survey.

F&R recommends that all of the identified ACM be removed by a Commonwealth of Virginia licensed asbestos abatement contractor prior to impact by renovation or demolition activities. Furthermore, all suspect ACM that has not been previously sampled should be analyzed for asbestos prior to impact by renovation or demolition activities. Additionally, the Asbestos Hazard Emergency Response Act (AHERA) requires that all schools built prior to 1989 have an Asbestos Management Plan prepared and updated every three years to manage any ACM/ACBM located within the facility. F&R is not aware of an existing Asbestos Management Plan for the Gage House, and therefore recommends that one be prepared and implemented for the facility.

## **Lead Based Paint**

F&R conducted a lead based paint screening of the painted surfaces within the Gage House. Lead based paint was identified on the following building components: white wood ceilings and walls located on the 2<sup>nd</sup> floor, white wood porch columns and roof on the rear porch, green wood lattice-work located on the exterior, white wood door frame located on the 2<sup>nd</sup> floor balcony, grey wood door and door frame located at the attic entrance and grey wood stair stringers and risers located in the stairwell. Since this was a limited LBP survey additional LBP surfaces may be present that were not tested. All painted surfaces should be assumed to contain LBP or lead-containing paint.

In general, if structures are to be renovated or demolished, typical demolition techniques can be used without lead based paint becoming an issue of concern. However, if building components containing lead-based paint are to be stripped and repainted, precautions would need to be taken. Specifically, if these building components are to be sanded, abraded or heated to remove the lead-based paint, workers trained in lead-based paint removal should be contracted for the work.

The “Lead: Renovation, Repair and Painting Program” rule, which will take effect in April 2010 will require that contractors involved in renovation, repair or painting activities in which children under the age of 6 are present take special precautions to avoid creating a lead hazard. These precautions include posting warning signs; restricting occupants from work areas; containing work areas to prevent dust and debris from spreading; conducting a thorough cleanup and verification that cleanup was effective. Should renovations activities that disturb LBP take place once this regulation takes effect, there will be a cost associated with renovating building components that contain LBP. At this time F&R believes that the presence of LBP will have only a minimal impact to the project, primarily with contractor compliance with current OSHA regulations.

## **Mercury-Containing Equipment**

F&R identified two thermostats that contained mercury-containing switches. These thermostats were observed on the 1<sup>st</sup> and 2<sup>nd</sup> floor hallways. Fluorescent light tubes were also inspected for the presence of mercury. All of the fluorescent light tubes observed by F&R contained the low-mercury symbol, indicating that they do not contain regulated levels of mercury.

## **PCB-Containing Equipment**

F&R visually surveyed the fluorescent light ballasts within the Gage House for the presence of the “No PCB” label. All of the ballasts observed by F&R contained the “No PCB” label and therefore PCB-containing ballasts are not a concern at this property. No other potential PCB-containing equipment was observed by F&R.

## **Cost Estimates**

F&R has developed conceptual cost estimates for the abatement of hazardous materials associated with major and minor renovations at the Gage House. F&R is assuming that no work is to be conducted on the roof.

# Falls Church City Public Schools

## Facility Master Plan



### Facility Evaluations – Gage House

---

#### “Minor Renovation” Cost Estimate

- Balcony Membrane – Approximately 150 square feet of an asbestos-containing membrane was observed on the 2<sup>nd</sup> floor balcony. F&R assumes a cost of \$15.00 per square foot for abatement of the membrane for a total abatement cost of \$2,250.
- Lead Based Paint – F&R assumes that structures containing lead-based paint can be renovated or demolished utilizing typical demolition techniques without lead based paint becoming an issue of concern if renovation work impacting LBP occurs before April 2010, when the “Lead. Renovation, Repair and Painting Program” takes effect. For renovation work that impacts LBP which occurs after this date, F&R assumes a cost of approximately \$5,000 for special precautions that will need to be taken.

The total estimated cost for the removal of the identified hazardous materials associated with a minor renovation at the Gage House is \$7,250. F&R typically adds an additional 25% contingency fee for estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated at 15 to 25% of the abatement costs. The total estimated costs to remove the identified hazardous materials associated with a minor renovation at the Gage House, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$11,328.

#### “Major Renovation” Cost Estimate (Estimate also includes abatement of the hazardous materials referenced in the “minor renovation” cost estimate section)

- Vibration Dampers – Three asbestos-containing vibration dampers were observed in the basement and attic. F&R assumes an abatement cost of approximately \$250.00 per vibration damper for a total abatement cost of \$750.
- Pipe Insulation – For the purposes of this feasibility study, F&R assumes that approximately 250 linear feet of asbestos-containing pipe insulation is located behind solid walls and ceilings and within pipe chases. F&R assumes an abatement cost of \$25.00 per linear foot for a total abatement cost of \$6,250.
- Mercury-Containing Thermostats – F&R observed two mercury-containing thermostats which were located on the 1<sup>st</sup> and 2<sup>nd</sup> floor hallways. F&R assumes that removal of the thermostats will cost a total of \$1,000.

The total estimated cost for the removal of the identified hazardous materials associated with a major renovation at the Gage House is \$15,250. F&R typically adds an additional 25% contingency fee for estimates such as these. Other costs typically associated with the abatement of these materials would include abatement design, project management, and oversight/monitoring of the work which are generally estimated at 15 to 25% of the abatement costs. The total estimated costs to remove the identified hazardous materials associated with a major renovation at the Gage House, including the 25% contingency fee and design, project management and oversight/monitoring fees ranges up to \$23,828.

**Appendix**

*Exhibit A1 – Zoning Map*

*Exhibit A2 – Soils Map*

*Exhibit A3 – Chesapeake Bay Preservation Areas Map*

*Exhibit A4 – Waterline Map*

*Exhibit A5 – Sanitary Sewer Map*

*Exhibit A6 – Fairfax County Comprehensive Plan Excerpt*

*Exhibit A7 – Fairfax County Tax Assessment Data*

*Exhibit B1 – Thomas Jefferson Elementary School Zoning Map*

*Exhibit B2 – Thomas Jefferson Elementary School Floodplain/RPA Map*

*Exhibit B3 – Thomas Jefferson Elementary School Waterline Map*