

Yorktown High School Replacement Project

Parking, Traffic and Pedestrian Safety:
Analysis, Issues and Solutions

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Summary

The Yorktown High School replacement and expansion project as proposed by the Arlington School Board has significant deficiencies in the amount and placement of parking, and fails to address serious traffic and sidewalk needs and pedestrian safety concerns near the school.

Yorktown High School draws over 1600 students and 230 staff to its doors every day of the school year. Additionally, upon completion the site will have a dozen distinct venues – including greatly expanded theatre, gym, meeting rooms and athletic facilities – that can host events drawing 5,000 total visitors, thus cementing the school’s role as the premier venue in North Arlington for a wide range of community activities. During the school day, parking demand at the site is conservatively estimated at over 500 spaces, and events at the site were known to draw in excess of 1000 vehicles even before the planned expansions.

Ownership of the site is split between the county and school system (Arlington County owns the Greenbrier Park athletic fields). Due to this split ownership, both the county and school system must participate jointly in many of the planning and design decisions affecting the site. However, in this case, neither has shown the necessary leadership to address the site’s shared parking, infrastructure and pedestrian safety needs.

The school replacement, when counting the “Phase I” addition, will result in a 45% increase in the size of the building, and will include several new components – expanded swimming pool, auxiliary gym and black-box theatre – that have the potential of drawing significant numbers of additional visitors to the site. At the same time, the expansion of the athletic complex – with its use of synthetic turf and dedicated fields – is resulting in a tripling of activity at the park portion of the site. You simply cannot expand the school and sports complex to this degree without corresponding parking, traffic and pedestrian infrastructure improvements of the site.

At the same time, it is a mistake to conclude that on-street parking can support these expansions. The on-street parking to the north of the site requires crossing Yorktown Boulevard and is not safe. The on-street parking options to the south of the school are limited and in many, many cases sub-standard due to inadequate sidewalk infrastructure and narrow residential streets.

Recommendations

The following steps should be taken to improve the safety and to accommodate the additional traffic at the site:

1. Provide a total of at least 400 off-street parking spaces with the majority of the parking located at the nexus of the site between the school building and athletic facilities.
2. Structured parking should be used as a means of reducing the footprint and providing effective placement of the parking on the site.
3. A sidewalk and curb and gutter must be installed on N. Greenbrier Street between N. 26th and N. 27th Streets.
4. Nubs, enhanced crosswalks and other appropriate measures must be taken to improve pedestrian and vehicular safety at the following intersections leading to the site:
 - a. N. 28th Street/N. Greenbrier St.
 - b. N. 28th Street/Yorktown Boulevard
 - c. N. George Mason/Yorktown Boulevard
 - d. N. Greenbrier Street/N. 27th Street
 - e. N. 27th Street/N. Harrison Street
5. A Traffic Demand Management Plan must be adopted for managing event traffic at the site. The plan must contain the following components:
 - a. A single, consolidated events database for scheduling all activities at the site (park and school). This database would be accessible to the neighborhood.
 - b. The civic association would have an equal role with the school and park systems in determining whether scheduling requests at any of the site's facilities trigger traffic management thresholds or need to be denied outright due to site capacity concerns.
 - c. Active traffic management – including additional “no parking” and zoned-parking violation enforcement and additional staffing - would begin when the combined numbers of cars expected for all concurrent events at the site is expected to exceed 300. Additional measures will be undertaken (e.g. shuttle service) as the number is expected to increase.
6. The practice of providing dedicated reserved spaces for staff should be ended as it can result in unused parking spaces.
7. Due to the amount of jaywalking, mid-block u-turns, and on-street student drop-offs occurring on Yorktown Boulevard, several actions should be taken to improve safety on this busy arterial street in front of the school:
 - a. A student drop-off entrance should be provided directly from Yorktown Boulevard. For example, consideration should be given to swapping the proposed school bus and car drop-off lanes.
 - b. A median should be installed on Yorktown Boulevard from N. George Mason to Little Falls Road.
 - c. User-activated pedestrian crossing signals should be installed at the major crosswalks (like that on N. Harrison St. at Lee/Harrison shopping area).

- d. The speed limit should be reduced to 25 mph.
8. A neighborhood-wide update should be made to the zoned-parking hours and coverage, thus providing, for example, a strategic extension of hours that would take into account factors such as street width, pedestrian safety concerns, availability of off-street parking for homeowners, etc.
9. Zoned parking should be allowed on N. Florida Street between N. 27th Road and N. 28th Street as requested by residents (denied because homes face wrong way).
10. Additional handicapped-accessible parking spaces must be added to the site, especially in front of the swimming pool and near the football stadium.
11. Details must be provided to the community indicating the number of off-street parking spaces available during each stage of construction, for example at six month intervals during the 4 to 5 year project. Shuttle service must be provided for staff and students at any point when the number of available off-street spaces drops below 220.
12. If utility undergrounding takes place as part of the school construction, it should include N. Greenbrier St. and N. Florida St. in order to remove existing poles from sidewalks.

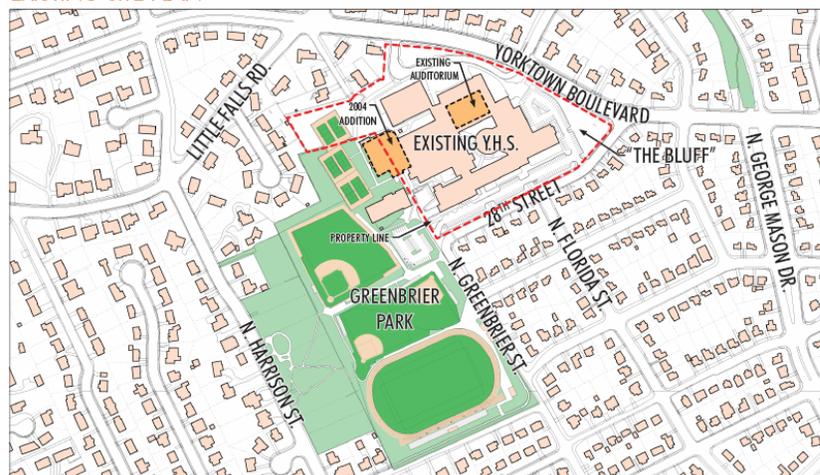
Site Description

Yorktown High School sits on a 12.3 acre site at the intersection of Yorktown Boulevard and N. 28th Street. The school's athletic fields are located on the adjacent 17 acre Greenbrier Park, which is owned by Arlington County. To the west of Greenbrier Park is the separate Chestnut Hills Park, which is the county's most heavily used "tot lot" park facility.

The site is surrounded on all four sides by single family homes. The zoning to the south and east of the site is R-6, with the majority of the actual lot sizes in the 5500 to 7500 square foot range. The zoning north of the school is R-10, and to the west of the site it is R-8. The

topography to the south of the school is relatively flat. However, the school itself sits on a hill which slopes considerably downward to the east and west.

EXISTING SITE PLAN



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YORKTOWN HIGH SCHOOL
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Currently, the county-side of the property line includes the athletic complex, which consists of football and track stadium with a synthetic turf field, a baseball stadium, a softball stadium and a softball community diamond. The county property also includes 4 tennis courts, the existing swimming pool structure, and a 51-space surface parking lot. The 31-classroom phase I school addition straddles the property line.

The school-side of the property line includes the older school building, a 6-space parking lot for the swimming pool, 2 more tennis courts and 171 additional surface parking spaces.

YHS/Greenbrier Park Expansion Timeline

The Yorktown High School replacement project currently being considered by the county is the third and most significant phase in the renovation and expansion of the site. Here's a timeline of the major actions in the process:

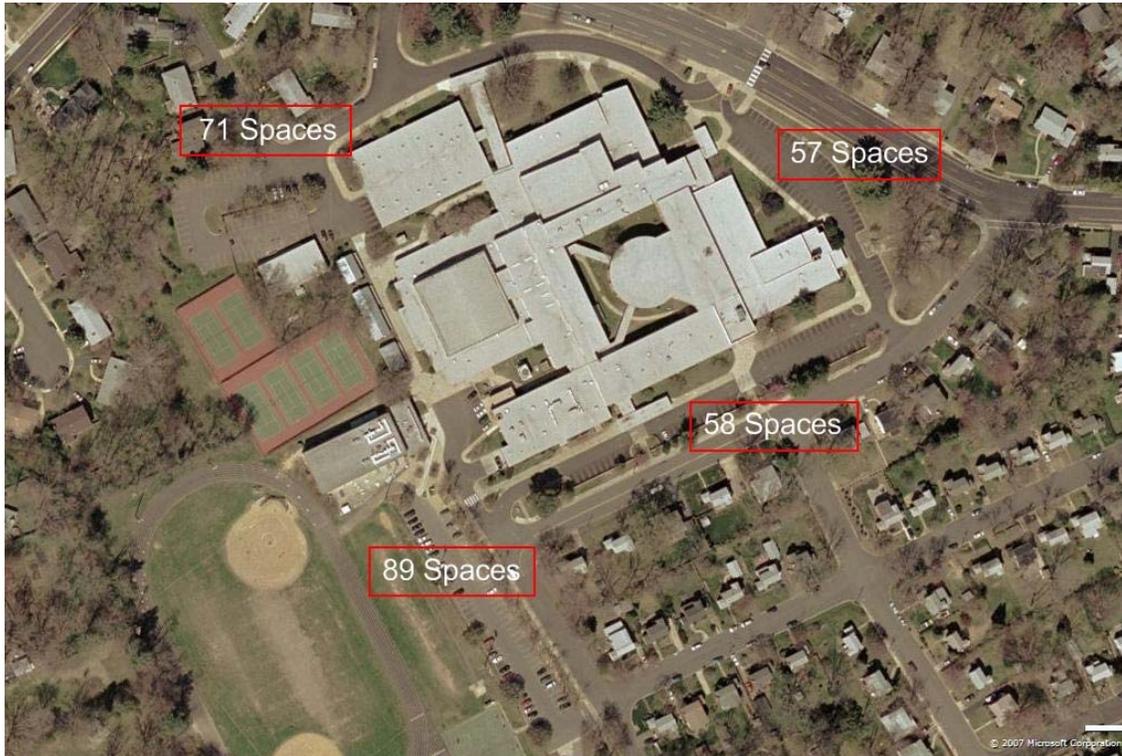
Action	Date
Kick-off meeting of master planning process	October 2000
Master Plan adopted	May 2, 2002, by School Board May 18, 2002, by County Board
Phase I, 31-classroom addition constructed	June 2003 to August 2004
Greenbrier Park athletic fields renovated and expanded	January 2006 to July 2007
Schematic design approved for YHS replacement by School Board	February 2007
Start of school replacement construction	Mid-2008
Completion of construction	2012 or later

Off-Street Parking: Before, During and After Expansion

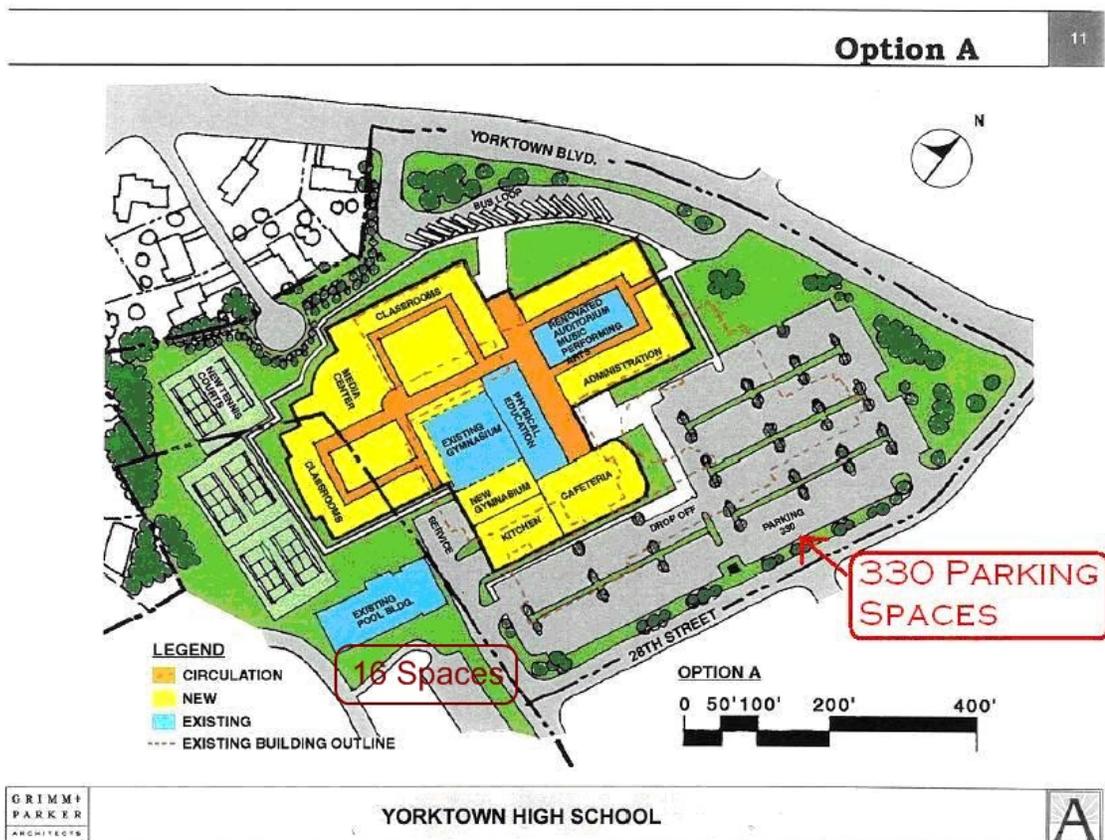
Because the expansion of the facilities at the combined school/park site is being carried out in multiple steps, the amount and location of off-street parking at the site has changed already and will change again by the end of construction. The following table compares the parking levels at various stages and in varying plans. The "Available in Bus Lane" column is included in order to provide an apples-to-apples comparison with the numbers contained in the latest YHS plans. Those spaces are used after-hours for event parking. The bus lane configuration is proposed to be left as-is during the school replacement.

Stage/Plan	Full-time Spaces	Available in Bus Lane	Total
Original pre-construction parking	271	13	284
2002 Master Plan parking	346	13	359
Current off-street parking	228	13	241
Latest design proposal at completion	334	13	347

Pre-Construction Parking – 271 Spaces



2002 Master Plan – 346 Spaces



Current Parking – 228 Spaces



At Completion – 334 Spaces*



*Numbers shown are derived from latest drawings but equal less than stated target.

Current Conditions and Behavior

Daytime on-street parking today is roughly equally split between streets to the north and south of the school. However, evening and weekend parking tends to be much heavier in the areas to the south of the school.

Both of these on-street parking areas have their own set of problems, which greatly reduce their appropriateness as a source for safe, reliable parking for a facility of this nature.

Given the volume of traffic on Yorktown Boulevard and its hills, curves and poor lines of sight and long distances between crosswalks, it simply is unsafe to rely on on-street parking north of Yorktown Boulevard. Furthermore, a high school would never intentionally be designed with a busy arterial street dividing its building from its parking.

The on-street parking areas to the south of the school are heavily dominated by substandard or missing sidewalks and narrow, sometimes uneven, street widths. Where sidewalks do exist, they certainly are not ADA compliant, and students and other visitors to the site often walk in the street.

Another important characteristic of parking and driving at this site is that nearly every activity is operating on a tight schedule, which means students and other visitors are rushing to get to their destination on time. This is true whether it is a school-day arrival or evening or weekend arrival. When a driver is trying to get to school on time, or arrive at the field in time for the opening kick-off, or the first pitch, or the opening scene of the play, that driver clearly will take risks not taken by a casual driver. They will also go to greater lengths to get a parking space as close as possible to their ultimate destination. Consequently, effective placement of the parking is imperative to maintaining safety at this site.

Parking Benchmarks

The amount of off-street parking available at the site is substantially below what is being provided at comparable sites, or what would be required at a comparable new facility or commercial building.

Relevant Parking Comparison	# of Spaces
Washington-Lee High School	660
North Tract Park	700
Parking Ordinance Parking Requirement	803

The county's parking requirements are covered in Section 33 of the Zoning Ordinance. That section begins:

It is hereby declared to be the policy of the county that:

For every land use hereafter established, there shall be provided sufficient space for access by, and for the off-street standing and parking of, all motor vehicles that may be expected to come to the establishment at any time under normal conditions for any purpose, whether as patrons, customers, purveyors, guests, employees or otherwise.

Several distinct provisions appear to apply to the schools and the type of additional facilities that exist at Yorktown High School and the adjoining athletic fields next door at Greenbrier Park.

Requirement	Units	Parking Spaces Required	Citation
1 space for every 10 students enrolled	1600	160	33.C.4.a.(3)
1 space for 10 seats in auditorium	677	68	33.C.4.a.(5)
1 for 10 seats in gym	663	66	33.C.4.a.(5)
1 for 10 seats in black box theater	140	14	33.C.4.a.(5)
1 for 10 seats in aux. gym	169	17	33.C.4.a.(5)
1 for 10 seats in athletic fields	2537	254	33.C.4.a.(5)
1 for 40 sq. feet of swimming pool area	8240	206	33.C.4.a.(9)
3 spaces per tennis court	6	18	33.C.4.c.(12)
Total		803 spaces	

Section 33.C.4.a.(5) clearly states that the parking required for the large assembly components is in addition to the underlying per-student requirement:

*Section 33.C.4.a.(5) Auditorium or other facility for public assembly **in** any of the above schools: One (1) space for each ten (10) seats or other vantage accommodation for spectators.*

School-Day Parking Demand

The daytime demand for parking spaces at the site is estimated to be as high as 590 spaces, based on staffing levels, APS policies and survey data. However, for planning purposes, the civic association has used a more conservative number and believes that the core daytime parking need is probably at the lower end of the 500 to 590 space range.

Category	# of Spaces	Comments
APS Policy Level for Staff and Visitors	220	Free parking is provided to the school's 237 staff
Student Parking	320	Based on Teen Transit Initiative Study survey results
Daytime Park and Swimming Pool Users	50	Required level from DPRCR
TOTAL	590	

The student parking demand number is derived from Teen Transit Initiative survey results. That survey indicated the following school arrival ratios for Yorktown High's 1600 students:

Arrival Method	Ratio
School Bus	22%
Parent Drop Off	34%
Walk	7%
Drive Themselves	20%
Ride With Friend	12%
Other (bike, ART bus, etc.)	5%

Given the 334 off-street parking spaces proposed for the site by APS, the number of vehicles proposed to be parked in on-street spaces is in the range of 166 to 256 (subtracting 334 from the demand range of 500 to 590), substantially exceeding the available number of adjacent on-street spaces.

Note, however, that there are also daytime events at the site that draw large numbers of additional visitors: elections, principal's award ceremonies, etc.

Event Parking Demand

Estimating parking demand for nighttime and weekend events at the site is more difficult than estimating daytime demand.

In a report date March 16, 2007, APS released its own parking needs analysis for the site which indicated that there are dozens of known occasions during a year when events will be held that draw several hundred or more attendees.

However, within the first month after the release of that report, several events were held at the site which were not listed in the report, including a large annual community fundraising event for one of the nearby elementary schools and several district and regional athletic tournaments.

PARKING NEEDS
DAYTIME WEEKEND AND EVENING PARKING REQUIREMENTS

Event	Occurrence	Number of People
SAT	One per month	50-100 cars
Debate	Three per year	175 people
	One tournament	350-400 people
District band/ Chorus auditions	One per year	300-400 people
Science fair	One per year	300 people
Graduation rehearsal	One per year	400 people

Daytime weekend events

Facility	Number of People
Theater	50
Track/Stadium	60
Pool	50
Gym	25
Baseball/softball fields	40
Tennis courts	15
Classrooms/meeting spaces	30

Typical evening parking required

Event	Occurrence	Season	Number of People
Football game	Five per year, plus one playoff	Fall	800-1,800 people
Homecoming dance	One per year	Fall	1,100 people
Variety show	One per year	Fall	700-750 people
Back-to-school	One per year	Fall	2,150 people
Basketball game	Eighteen per year, plus playoffs and holiday tournament	Winter	200-900 people
Swim meet	Five per year	Winter	100 people
Musical pyramid concert	Two per year	Winter	200 people
Winter concerts	Three per year	Winter	100-500 people
Spring sports (combination of sports occurring concurrently)	Three to four per week, plus four to five playoff games	Spring	300-400 people
Spring play	Three consecutive nights	Spring	600-700 people
Debate tournament	One per year	Spring	350-400 people
Spring concerts	Three per year	Spring	100-500 people
Athletic awards ceremony	Three per year	All	350 people
Family network	Four per year	All	100 people
Crossroads	Six per year	All	100 people
Meetings (including PTA, booster clubs, etc.)	Four to five per month	All	20-30 people

Evening events

EHRENKRANTZ ECKSTUT & KUHN ARCHITECTS ARLINGTON PUBLIC SCHOOLS YORKTOWN HIGH SCHOOL BUILDING LEVEL PLANNING COMMITTEE ©2007 EE&K

The March 16 parking report understates the event demand for these reasons:

- not all events were included
- does not consider events that will be added after expansion
- does not consider overlapping parking requirements for back-to-back events.

APS had indicated that it believes that the ratio of attendees to cars is 2:1. For example, it states in its Traffic Demand Management draft that the participant per car experience for events with a capacity of 974 persons would generate 487 cars at the site.

While a 2:1 ratio may seem high (i.e. more cars), it is important to keep in mind that events at the site have both participants (e.g. the students in the play, or the players, coaches and staff in a game) and attendees, and the participants often are not counted in the capacity utilization totals.

The site has a significant number of venues that can each draw its own attendees, and the potential for multiple simultaneous events goes up significantly with the new building and athletic field design.

Once completed, the site will contain the following venues for hosting activities simultaneously:

- football stadium with synthetic turf (new) and track – 2071 seats
- baseball stadium – 226 seats (new)
- softball stadium – 240 seats (new)
- community softball diamond – portable bleachers
- auditorium – 677 seats
- gymnasium – 663 to 1300 seats (depending on configuration)
- black box theatre – 140 seats (new)
- auxiliary gym – 169 seats (new)
- swimming pool – 200 seats (new)
- cafeteria – 11,000 sq feet (est. 400 or more seats)
- tennis courts (6) – portable bleachers
- 114 classrooms – seating for 1610
- large-group meeting space – 2000 sq feet (est. 150 seats).

Taken together, these venues – not counting the 114 classrooms – have the capacity for simultaneously hosting events for around 5,000 attendees. Yet, APS has proposed providing fewer than 350 parking spaces for the site!

Based on the experience to-date from the newly-expanded athletic complex, it absolutely is to be expected that several events will be held at the site at the same time. A single large event of 1,000 attendees – for example, a football game – pushes the bounds of the maximum available off- and on-street parking. Consequently, there simply is not adequate parking capacity to operate all of the venues at the site without diligent monitoring and potential restrictions on planned activities.

APS' proposed Traffic Demand Management (TDM) falls woefully short in establishing the necessary parameters for managing the site's potential parking demands. At a minimum, the civic association insists on the following conditions:

1. A single, consolidated events database for scheduling all activities at the combined site.
2. The civic association would have an equal role with the school and park systems in determining whether scheduling requests at any of the site's facilities trigger traffic management thresholds or need to be denied outright due to site capacity concerns.
3. Active traffic management – including additional "no parking" and zoned-parking violation enforcement and additional staffing – would begin when the combined numbers of cars expected for all concurrent events at the site is expected to exceed 300. Additional measures

will be undertaken (e.g. shuttle service) as the number is expected to increase.

Given the significantly expanded event capacity at the site, these TDM measures must be implemented even with the higher off-street parking level requested by the civic association.

Available On-Street Parking

During the Building Level Planning Committee process, members were told that the available amount of on-street parking was from 70 to 80 spaces. The November 2006 Traffic Impact Analysis prepared for the project by Patton, Harris and Rust stated:

Based on measurements taken along the streets at the school, it is estimated that 70-80 parking spaces can be accommodated in these legal street spaces that have no time limit or any additional restrictions. Existing analysis showed that at maximum parking along each of the streets (see Figure 4), 79 spaces could be accommodated at these locations.

However, in September 2007, a check was made of the areas included in that study, and it was determined that the number of spaces actually available adjacent to the school is just 61 due to turning lanes, bus stops, and other no parking areas.



Only 40 to 45 On-Street Spaces Should Be Considered as Tier I Parking

evening and weekend events, this long block can be fully parked on both sides, making it impossible for cars to safely pass in both directions. Zoned parking serves a significant safety benefit in this example – the provision of two-way passage space.

Structured Parking

The neighborhood has indicated that it would support the use of structured parking in meeting the site's parking needs as long as that structure was incorporated in the design of the school building itself. The location that is supported by the civic association is in the area of the current swimming pool at the southwest corner of the school building. At that location, the parking structure would most effectively meet the parking needs of the venues in both the school building and the athletic complex.

The civic association does not accept the argument that structured parking could be added in that general area at some later date. The building's utility hookups are located in that area of the building, and if constructed later, the structured parking would most certainly be detached from the building, thus making it less aesthetically acceptable to the closest residents.

The advantages of structured parking are:

- puts the greatest number of spaces where they are needed the most
- provides the opportunity for more green space in the most visible area in the front of the building
- provides for more effective management of site visitors.



Preferred Location for Structured Parking

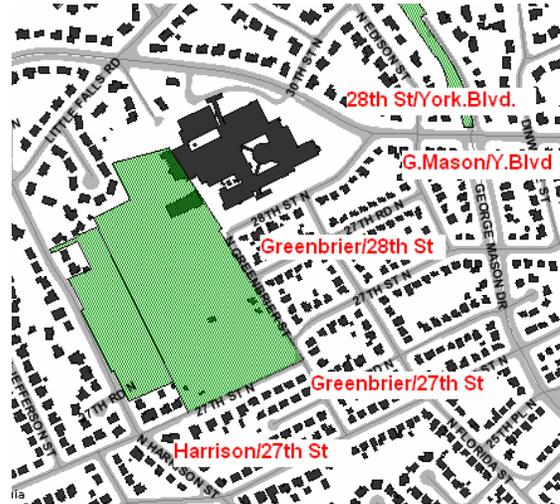
This game-night photo shows several cars parked illegally in the existing 6-car swimming pool lot.

Dangerous Intersections

Several intersections that serve as access points to the site are already considered to be quite dangerous, and the civic association believes that measures must be taken to improve safety at the following intersections prior to expansion of the school:

- N. 28th Street/N. Greenbrier St.
- N. 28th Street/Yorktown Boulevard
- N. George Mason/Yorktown Boulevard
- N. Greenbrier Street/N. 27th Street
- N. 27th Street/N. Harrison Street

Of these, only the two that immediately adjoin the school – 28th Street at Yorktown Boulevard and at N. Greenbrier Street – now appear to be slated for at least some measure of improvement as part of the project.



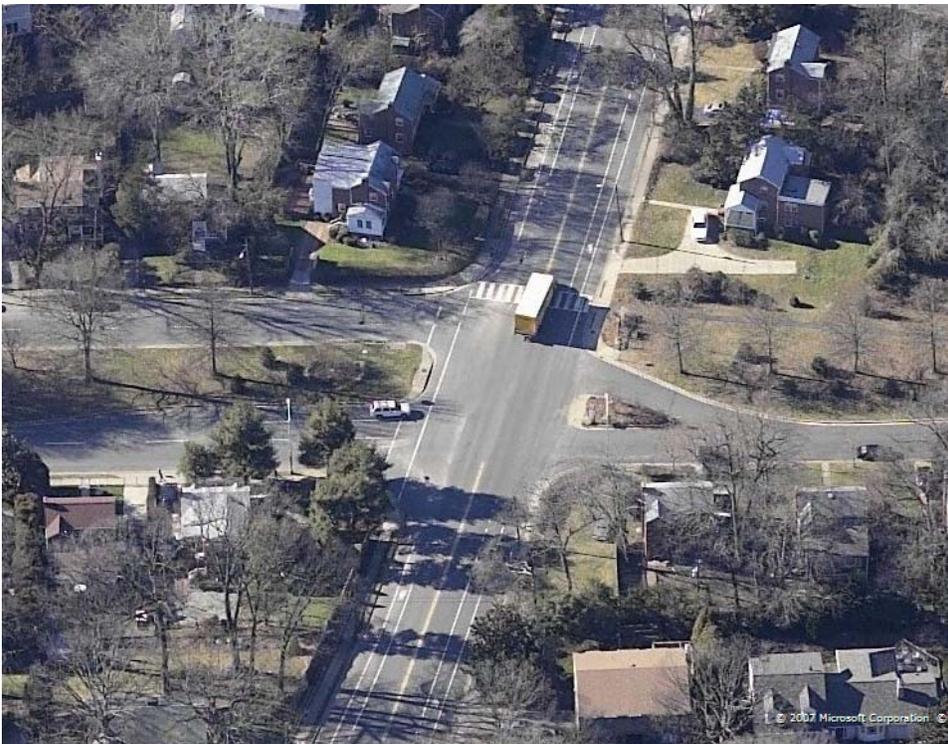
The March 16 APS Parking Report for the project indicated that reviews of these additional intersections would be completed by the end of June, but the civic association is not aware that those studies have even begun.



28th Street/Yorktown Boulevard intersection lacks crosswalks and has poor lines of sight, especially for school traffic turning onto Yorktown Boulevard.



N. Greenbrier Street crests at intersection with N. 27th Street making it very difficult to see oncoming traffic. Greenbrier is less than 26 feet wide at this intersection.



Yorktown Boulevard at George Mason is a major intersection with just a two-way stop.

Missing and Substandard Sidewalks

The sidewalk infrastructure in the area south of the high school is in extremely poor condition. Nearly every block is missing sidewalk altogether or is in need of significant modernization.



Most sidewalk installations are now handled by Arlington’s Neighborhood Conservation program. However, that program typically handles projects that are no more than 1 or 2 blocks in length, and any one of the roughly 50 Arlington neighborhoods that currently participates in that program at most will receive funding for just one project in a two-year time frame. Consequently, a realistic expectation is that, without additional help, the sidewalk infrastructure needs in the area immediately adjacent to the school could take as long as 20 or more years to address through the normal course of the Neighborhood Conservation program.

The neighborhood currently has sidewalk projects pending through the Neighborhood Conservation program for N. 27th Street and N. Greenbrier Street. However, the neighborhood has not been able to submit an additional project request for N. 26th Road under the program’s current guidelines of scoping no more than two projects per neighborhood.

The civic association believes that the missing segment of sidewalk on N. Greenbrier Street from N. 26th to N. 27th Streets should be installed as part of the high school replacement project.



N. 27th Street
No sidewalk
between
Greenbrier and
George Mason

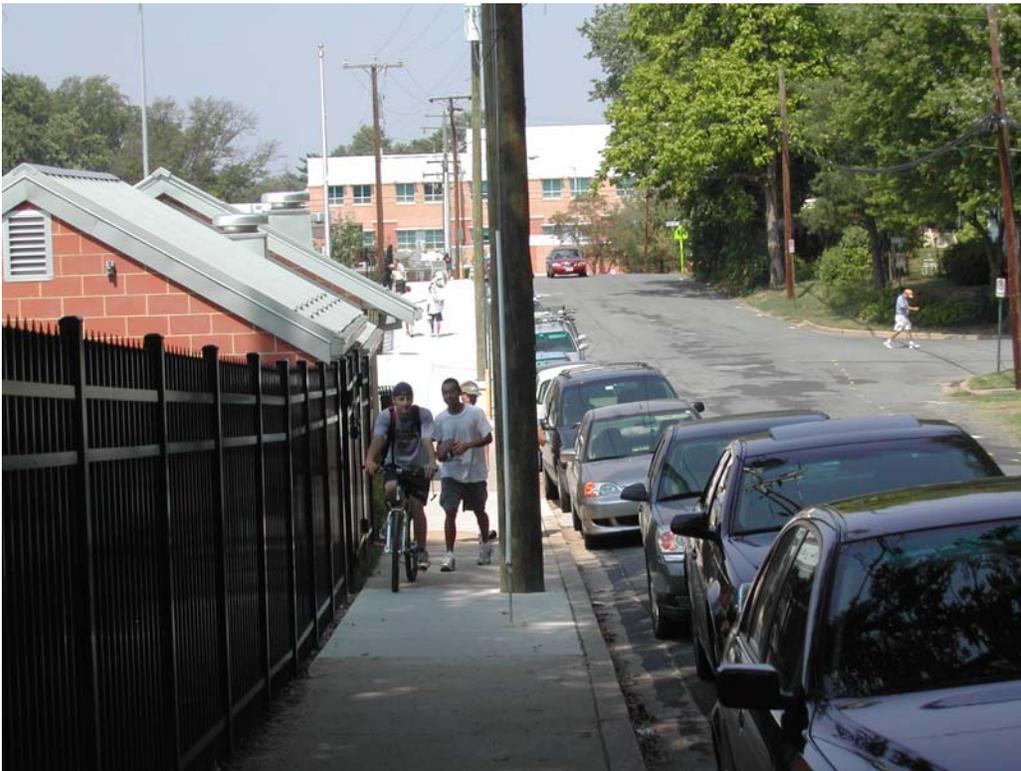
N. Greenbrier
No sidewalk
between 26th and
27th Streets



N. 26th Road
No sidewalk
between
Greenbrier and
George Mason

A problem which affects many of the blocks that do have sidewalks is the existence of light poles in the middle of narrow sidewalks. If utility undergrounding takes place on the south side of the school, the civic association urges that the undergrounding effort include N. Florida Street in the block immediately south of the school, as well as N. Greenbrier Street along the athletic fields.

As shown in the following photo, the utility company is continuing the practice of placing poles in sidewalks. This picture shows a pole that was newly placed in the sidewalk during the Greenbrier Park reconstruction, even though this segment of sidewalk is heavily used as it is just outside the main gate of the stadium.



Yorktown Boulevard Safety Concerns

Yorktown Boulevard, which travels past the north side of the school site, is a busy arterial street that is plagued by hills, curves and poor lines of sight.

Despite those dangers, the following photos display an extremely unsafe amount of u-turns, on-street drop-offs and jaywalking in front of the school. There are concerns that the proposed location for the new building's main entrance may actually exacerbate this behavior, especially if there is no student drop-off entrance to the site from Yorktown Boulevard.

In addition to drop-off area access from Yorktown Boulevard, additional safety improvements – such as medians, a speed limit reduction, user-activated crosswalk signals, etc. -- should be considered for Yorktown Boulevard.





Parking Enforcement Problems

In addition to an inadequate transportation and pedestrian infrastructure, the site is plagued with traffic enforcement problems. These enforcement problems are at their worst in these areas:

- no-parking areas at the corner of Greenbrier and N. 27th Street
- no-parking along the east side of N. Greenbrier Street across from the stadium
- parking in ART bus stops on Yorktown Boulevard
- curb-lane parking in new 51-space Greenbrier parking lot
- excess parking in swimming pool parking lot
- zoned parking enforcement, particularly in the late afternoon and early evening.

