

## ABSTRACT

Title of Document:                   EXPLORATIONS IN SUBURBAN HIGH  
  SCHOOL DESIGN: UNCONVENTIONAL  
  SITING

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2008

Thesis Directed By:               Assistant Professor Isaac Williams, School of  
  Architecture, Planning, and Preservation

This thesis proposes a design strategy and solution for a suburban high school prototype sited along commercial highway MD40 in Baltimore County, MD. The goal of the thesis is the design of a comprehensive high school that promotes unconventional site selection; mitigates the highway's urban role as community divider; is endowed with civic dignity; and becomes a fulcrum for strong design in the community.

The MD40 site offers unique opportunities. It bears the stigma of being a socio-cultural dividing line as well as a physical barrier. The surrounding region is also a target for large-scale development related to expansion at a nearby military research base. The program is focused on the workforce education needs of the military research base. Science and technology courses appropriate for this focus have been added to the curriculum along side the traditional trade and liberal arts.



EXPLORATIONS IN SUBURBAN HIGH SCHOOL DESIGN:  
UNCONVENTIONAL SITING

By

Adam Scott MacDonald

Thesis submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park, in partial fulfillment  
of the requirements for the degree of  
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~Adam MacDonald



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# Chapter 1: Introduction

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## Chapter 2: Performance and Expectations of the 21<sup>st</sup> Century Suburban High School

**BALTIMORE COUNTY PUBLIC SCHOOLS  
HIGH SCHOOL REPORT CARD**

SUBJECT / TEACHER	1	2	3	4	F	PERFORMANCE AND SELF-DEVELOPMENT										Conference Desired					
GEOGRAPHY KREBS D	C-	C-				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	X
CIVICS TROUTMAN D	B-	C				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	X
HISTORY FERRARD R	C	C-				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	X
ENVIRONMENTAL SCIENCE FEELEY H	B-	D				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	X
GRADING CODE																					
A - Consistently at the highest level of achievement B - A high quality of achievement C - Acceptable level of achievement D - A low quality of achievement E - Unsatisfactory achievement S - Progressing successfully I - Improvement needed P - Pass F - Fail Inc - Incomplete M - Medical * - Program modifications made																					
INTERDISCIPLINARY TEACHING TEAM COMMENTS FOR SUBURBAN HIGH SCHOOLS NEEDS TO SHOW IMPROVEMENT WITH WORK HABIT CHANGES. NO CHANGES WILL LEAD TO FAILURE.																					
O STUDENT SERVICE HOURS WERE RECORDED AS OF 1/1/08																					
GRADE SECTION 09 01	SCHOOL 2007 - 2008	PHONE NUMBER 887-5100	PRINCIPAL EBENEZER N. PULASKI																		
SCHOOL YEAR 2007 - 2008		QUARTER SECOND		QUARTER ENDING JANUARY 26, 2008		10 ALLENDER ROAD															
43 DAYS OF SCHOOL		89 DAYS ABSENT		NONE		BALTIMORE MARYLAND 21236															
QUARTER YEAR TO DATE		QUARTER YEAR TO DATE		QUARTER YEAR TO DATE																	

Fig. 2-01: Report Card of Suburban High School Design.

Comments

Over the course of the last fifty year semester, suburban high school design has underperformed in a number of disciplines, consistently producing work commensurate with the substandard marks outlined above. The gravest concern and area of most dysfunction is geography. Here, the design of the suburban high school has shown two specific and troubling deficiencies. First, when selecting a site, school planners have often demonstrated a preference for, or even mandated the selection of, parcels of land of a size that are completely incongruous with the amount of program ultimately constructed. The result of this poor work habit is that there simply are no more properties of size available that can accommodate a school of “conventional” design, even in the suburbs.



become a major hurdle. The conventional high school chooses to distance itself from its student catch basin, fueling problems of communication between the school and the neighborhoods it serves. Good attendance in the community architectural forum is belied by the fact that the typical high school does not participate or contribute anything meaningful to the discussion, often leaving as a face in the crowd with no memorable or distinct presence. Likewise in *history*, high school design carries itself with an attitude of disrespect to the social and cultural meanings its typology and context can carry. In *environmental science*, high school design is failing to apply acquired knowledge to new problems. To date, high schools have continually tried to repeat and regurgitate principles explored early on in the semester. Stagnant work habits like these will lead to failure in addressing issues of energy conservation and ecological preservation that are the crux of this semester's final exam.

### *The Nature of the High School Typology*

Familiar teacher chidings like these accentuate the elementary foolishness of a few of the prevalent architectural shortcomings in high school design. This is not an exaggerated simplification. However, if the issues are as rudimentary as suggested, from where does the difficulty in addressing them come? In many ways, it is simply a consequence of what a school is and what it must do; that is, its *typology*.

By nature of this *typology*, schools bear burdens, ones that are made all the more heavy by legislative, political, and financial water-logging. A high school

must provide for the safety and well-being of near 2000 users each day in a controlled, comfortable indoor environment. It is called on to be constructed with durability appropriate for a fifty year life span, but also with flexibility to thrive amid changes in population and curriculum. By type, a high school is asked to encourage and help nurture all the users through its design. But these same users often feel themselves a captive participant and would rather vandalize their school than care and maintain it. Truly, these practical issues must be navigated, and hundreds of suburban high schools have already proven they can be. However, the architecture of the solutions often merits the marks of our introductory report card. They choose quantity of site over quality. They do not “work well” with their surroundings or respect the context in which they are placed. They are loud in size, but say nothing. They do not apply what they have learned to new problems of culture and environmental stewardship. In short, they fail the final exam.

This thesis is a study session to prepare for the next test, be it a scheduled exam or a pop quiz. For either scenario, the best course is to be constantly reflecting on and relearning these elementary rules of education and architecture. The case study for this session is a new comprehensive high school to be located and designed as most appropriate for a site along the MD40 corridor of Baltimore County, MD. The output of this case study will be the preparation and compilation of analytical and speculative graphics and verbal arguments in the areas of program, site, and (less formally) precedent analysis. From these explorations, three design strategies will be created and weighed for their

appropriateness and potential, one being ultimately selected, or amalgamated if appropriate, for more in-depth investigation via a full scale design effort. Begin.





## Chapter 3: Program

*Overpopulation in Baltimore County, Now and in the Future*

The construction of a new high school is a costly endeavor and one that, evidence shows, school boards will bend over backwards to avoid. Consider as proof how the portable classroom, or “trailer”, is so longstanding and ubiquitous a solution for all degrees of fluctuation in suburban high school populations. What this sentiment stands to highlight, however, is that any proposed high school must be vehemently motivated by some outside force(s) to overcome hesitation to build. The landscape of northeastern Baltimore County near the MD40 corridor, the site for this case study, is one such location where a strong impetus currently exists and an even stronger push is coming directly.

To administrative bodies involved with schools, the number of students in a school compared to the school building’s “state rated capacity” is the definitive measure of the need for a new building (were it some other factor, such as adequacy of heating and air conditioning systems to promote a comfortable learning environment for the students, dozens of schools across the state could be closed and replaced today). In northeastern Baltimore County, there are four conventional, public high schools (“magnet” schools not considered conventional): Loch Raven High School, Perry Hall High School, Kenwood High School, and Chesapeake High School. According to enrollment data from the beginning of the 2006 school year, Loch Raven is operating at 121% of its state rated capacity, Kenwood at 120%, Perry Hall at 109%, and Chesapeake at 100%



(see figure #-# for additional information). A 2003 report commissioned by Baltimore County on the same student population concerns being examined in this thesis provides some perspective on the level of inappropriateness of these conditions. The Board of Education of Baltimore County Public Schools defines a school as “overcrowded” if it is operating above 90% of its state rated capacity. The State of Maryland, as an entity, is only slightly more forbearing of the problem, defining overcrowding at operations above 95% of the state rated capacity. Baltimore County, as an entity, sets their mark at 115%. If one were to “split the difference” of these measuring sticks and compare a school’s population to 100% of its state rated capacity, the resulting excess of students from the four schools listed would total 729 students. This begins to demonstrate the need for a new high school in northeastern Baltimore County, but it is only the first of three bullets to be fired.

*[Addendum: Since the writing of this thesis, Baltimore County has collected and published its enrollment numbers for the 2007 school year. The updated data for the four schools highlighted above is as follows: Loch Raven High School’s operations dropped from 122% to 113%, Perry Hall High School’s from 110% to 109%, Kenwood High School’s from 121% to 117%, and Chesapeake High School’s from 100% to 95%. All remain above state standards for overcrowding]*

The second arrow is related to the influx of more students to the high school system due to new residential developments currently under construction. Baltimore County annually compiles a listing of the estimated number of pupils to

be yielded to individual high schools by new developments. According to this list, new developments are slated to fill Perry Hall, Loch Raven, Kenwood, and Chesapeake high schools with an additional 599 new students. Couple this number with the total due to current overpopulation and the new sum of students without a properly populated high school environment awaiting them is 1328. That total alone is as much or more than the state rated capacity of half (12 out of 24) of the high schools in Baltimore County. That number, however, only reflects developments that are “on the books.” The third arrow is the fatal blow to any who would oppose the great need for a school sited in line with this thesis.

In 2005, the Department of Defense examined the operations of military facilities throughout the country. In an effort to streamline the work of these bases and to save the federal government billions of dollars in operation funding, propositions were made under the program heading of “Base Realignment and Closure”, or BRAC. One of the bases affected by this initiative is Aberdeen Proving Ground, a military research base located along MD40 about 17 miles northeast of the region under investigation in this thesis. Due to the dramatic expansion of programs at this base, a predicted 50,000 to 75,000 people are expected to be migrating to the region to fulfill the bases workforce needs. As a result, Baltimore County, Baltimore City, Harford County, and Cecil County are each formulating action plans to accommodate this huge incoming population (see Appendix # for excerpts from these action plans). The potential pupil yield over the next five years in the specific corridor at which this thesis is looking will be

staggering. In the end, one new high school, as this thesis proposes, will likely not be enough.

### *A Need-Based Curriculum*

These omens dictate the need for a new high school facility, but what sort of curriculum should this facility provide? Should the facility respond directly to the needs of Aberdeen Proving Ground, grooming a future horde of science and technology savvy military employees? The answer is no. A sentiment such as this would be short-sighted. Consider the population density of Baltimore County as represented in Figure #-#. The map indicates that Baltimore County's population gravitates first and foremost around the metropolitan area, as one would expect, then creeps outward along major thoroughfares. The "finger" of density pointing to the northwest follows Interstate 70. The "finger" to the north follows Interstate 83. Interstate 95 and its historical predecessor and neighbor, MD40, reach out to the northeast, yet there is no "finger" of population following...yet. But there will be. This prediction is very plausible in that as a "finger" of density gets further from the metropolitan area from which it was spawned, it will lose its accessibility appeal and a new finger will be formed to reap the benefits of the metropolitan center. Couple this with the development that must happen by 2011 to support the BRAC initiatives and it is certain that the whole region will become a hotbed for development. This all serves as a long-winded explanation to the one-word answer regarding curriculum given above. A high school located in this region will need to support the growth of an entire community, not simply the engineering and medical needs of Aberdeen Proving

Ground. To this end, the curriculum that is needed is one that is fully comprehensive in liberal arts and career (or vocational, to use an old term) education. The appropriate curriculum to be created is one that provides the student the opportunity to pursue a career in support of Aberdeen Proving Ground or aid in the construction of buildings for the new flood of buildings destined for the region or serve the thousands of people who will call this region home in five years. The proposed program (see Appendix #-#) is based on this assertion and is categorized using the Maryland Career and Technology Education (CTE) system of career clusters as published by Maryland Public Schools. As a closing remark, the program should be, above all other things, proactive. A program strategy designed to create a positive future will create a positive future.

### *The Kit of Parts*

Architecture is meaningless if it does not apply theory and conviction, like the above, to built form. The following figures, including notes, sketches, and precedent images are a means of making this marriage of theoretical analysis and practical examples visual.

## Chapter 4: The Site

Today, MD40 has become primarily a commercial and commuter highway, carrying a large volume of local traffic and interstate overflow but possessing little architectural character and a negative identity. Connectivity of communities and hubs is also a seminal factor to evaluate. Interstate 95 has few access points in this area, making it more of a barrier than a connector. MD40 is crossed only by a few choice roads, the most prominent being Ebenezer Rd. Ebenezer Rd. connects the community of White Marsh to MD40 from the north and the communities of Chase and Bowley's Quarters to MD40 from the south. Standing alongside these roadways (figuratively, not literally) are three train stations through which the commuter MARC train runs. The nearest station is approximately five miles to the southwest, with the other two stations habiting sites of a greater distance away to the northeast.

Before selecting an appropriate site for a new high school, a last set of regional observations must be cited: the locations and situations of the current high school facilities. The nearest facility is Perry Hall High School, about three miles to the northwest. Perry Hall is, as was noted, at 109% of its state rated capacity and historically has always been overcrowded. Perry Hall is purely a community high school, though the area of its catch basin is large. Kenwood High School is the next closest facility, four miles to the south west. Kenwood, again, is overcrowded to the tune of 121%. It is primarily a community high school, though it is home to the highly esteemed International Baccalaureate program that attracts and caters to the gifts of the county's strongest students. Kenwood High School's catch basin is split into two areas. The catch basin that

stands between the split pieces of Kenwood belongs to Chesapeake High School. About two miles further away from our proposed site than Kenwood High School, Chesapeake High School is home to the county's Science, Technology, Engineering, and Mathematics program. Chesapeake is reasonably populated at 100%. Like Kenwood High School, its catch basin is also split. Two other high schools play a peripheral role in this part of Baltimore County. Loch Raven High School is the school districted north of Perry Hall High School. Loch Raven High School's population is, as of 2006, at a very high 122% capacity. The second school is Eastern Technical High School. Eastern Tech is located one mile west of Kenwood and is a magnet high school, drawing students from all over the region to participate in its trade and profession courses.

*Regional speculations about the site*

These observations provide an armature upon which to mount speculation for the siting of a suburban high school. The major metropolitan areas listed support the siting of a high school in this region. A high school needs students to justify its existence. Students are drawn from areas of residential development, and areas of residential development grow and thrive where there is a job market of opportunity and stability for homeowners to access. Having four metropolitan areas within a commutable distance creates a fertile field for development all over the region, but particularly the closer one gets to the metropolitan hubs.

While growth and change mark a successful recipe in the urban condition of the region, the natural determinants make a high school in this region wise for the opposite reason: their staying power. Both the bay and the park are regional anchors, meaning they will exert their influence whatever changes may come. This stability provides value to its surroundings. Truly, all types of buildings look for value in their siting. A commercial endeavor, for example, looks for a value that leads to profitability. This value can be found in many types of settings. The value a school seeks is different and more difficult to find in a site. A school tries to inspire its students to pursue knowledge of the world they live in, culminating in the development of a passion for a specific area to pursue and enjoy in a career. It is difficult to cultivate passion and curiosity in a parking lot. However, the natural features of this region would create an ideal setting to inspire young adults to do great things.

The roads tell a different tale. While the natural determinants promote themselves as a source of inspiration and delight, the roads bring about a more practical argument. Schools, particularly high schools, join neighborhoods and communities together. As such, they want to be accessible to all the communities served. Per the observations above, the intersection of Ebenezer Rd. and MD40 looks to be the fulcrum for making this possible. It is here only, if one will remember, that the communities north and south of MD40 can access the main thoroughfare. This location would also be wise related to the current population density of the region while still positioning it to support growth along MD40 and other nearby areas. A site along MD40 is critical.

More than the other two thoroughfares observed in this region, MD40 bears the stigma of being a social divider. There is a rift in this area that one perceives by living in the community for a number of years. It is primarily a perception of education and, by inference, intelligence. White Marsh, as an example, is a community located north of MD40. Census data shows that in this community, 30.8% of adults have earned at least a Bachelor's degree in the course of their education and 72.7% work in professional/ management/ office "white collar" occupations. Bowley's Quarters, a community to the south of MD40, has 12.2% of adults with a Bachelor's degree and 56.1% working in "white collar" jobs. These numbers demonstrate the stereotype's being cast. There is a perception among some residents north of MD40 that looks at those residing south of MD40 as uneducated and living on the "wrong side of the tracks." Conversely, the perceived stereotype in the opposite direction is that residents north of MD40 are elitist snobs. For this reason, a school sited along MD40 must be specifically designed to unite communities not just in a token "public relations" way, but in a real person-to-person way.

Last, the location of the other area high schools supports the location of a high school in this region. First, it would remove the cumbersome split catch basins feeding Kenwood and Chesapeake High Schools. Second, it would alleviate the consistent overcrowding occurring in Perry Hall and Kenwood High Schools, and in a second hand way, Loch Raven High School. By siting in this region, the school would also find itself prudently placed to promote pedestrian

and bicycle access as its jurisdiction would stretch no more than four miles before reaching the boundaries of the next county to the north.

### Local observations of the site

The local scale is the second dynamic of site investigation needed for a clinical analysis. “Local scale”, within the confines of this thesis, refers in scope to the area within a one-mile radius of the intersection of MD40 and Ebenezer Road. This location for “ground zero” was selected in line with the regional analysis above. At this scale, there are five determinants that are seminal to the site selection process: *topography, orientation, access to the site, context, and zoning.*

The topography at the local scale is varied in its degree of “activity” by location (what topography isn’t), but predictably so. At points northeast of “ground zero”, the topography is gently sloped as one nears the Chesapeake Bay inlets, very gently sloped along MD40 itself, but very active north of MD40 with hills and valleys creating a near 40’-0” change in elevation at its most disparate points. South of “ground zero”, there is, according to topographical maps, an elevation change of nearly 100’-0” between the top of a hilly wooded area and the low point of MD43 sloping down to connect with MD40 (MD43, to give a quick description is a road at grade north of MD40, crosses above MD40 by way of a man-made overpass, then slopes down to connect with MD40 by way of a long, curvaceous exit ramp. In recent years, this exit ramp has had a signaled

intersection added to accommodate an extension of MD43 to the south.) As one moves to points west of ground zero, the terrain becomes hilly both north and south of MD40 as there are no nearby water inlets.

The orientation of a building, or buildings, on its site can reasonably be affected by four factors: the *sun*, *wind*, *man-made elements*, and a category for *unique conditions* that may or may not exist for all sites (i.e. places of worship might be oriented towards a sacred city located thousands of miles away).

Regarding solar orientation, the conventional preference is for a design that limits direct admittance of east and west light and encourages glazing on the north and south faces. If desired, this convention can be observed at a number of sites along MD40 as there is no imposing shade or reflection element to dictate an adjustment. However, the use cycle of a high school is a factor in how much one should observe typical orientation convention. High schools in Baltimore County typically run about a 7:45 AM to 2:15PM school day. This means that the impact on the user of early morning eastern light must be calculated more carefully, while the impact of late afternoon light can be considered with less intensity. As its impact in this region is negligible, wind orientation is not a strong determinant at the local scale and therefore does not merit its own paragraph.

There are a few man-made elements, however, that do deserve attention. The most powerful of these is MD40 itself. At a width of four travel lanes with shoulders on each side in both directions, the highway is substantially wide. It's

speeds also run between 40 and 50 MPH making it difficult to traverse. From an architectural point of view, how one chooses to relate to the highway and practically deal with the needs of student drop offs and service/deliveries is important in determining orientation. Besides the highway, there are also high voltage power lines in the region. In selecting a specific site, care should be given to avoid these lines as prescribed by codes enforced in the jurisdiction.

Access to the site is the third player in local site selection, as transportation would likely be the number one concern related to the logistics of running a school. First, buses must be able to access the site. This requires that provision be made for accessibility from all directions, something a highway with median barrier wall makes troublesome. Also, as much as bus loops are anathema as currently designed, they do require a dimension in line with the maneuverability of long buses (the manner of bus size, etc. is not a topic of this thesis, though some might consider it an issue). This needs to be worked in to the accessibility plan. Second, accessibility must be made for staff, student drivers, and those who are dropping off their kids. Parking lots fall into this category. As an observation, parking lots are one of the true nightmares of high school design. Anecdotally, some schools have students just drive over the lawn of their school to get out of the parking lot at the end of the day because lines of cars and exits points are miserable. Third, accessibility for pedestrians and bike riders must be considered. Of primary importance is the safety of these routes, but also, with the push towards eco-friendly design, the visibility and siting of these routes is

important to consider early on so as to promote the most use possible, given the other site conditions.

Context and zoning, the final two site selection criteria, are interwoven with one another. With regard to context, there is very little, quantitatively and qualitatively, in the way of built forms. The general mass of building is low and sprawling. From the immediate context, a prevailing building material cannot be determined either, though a more regional look shows brick to be most popular. The current zoning along MD40 is a mix between business and light industrial with residential zones north of Red Lion Rd. In line with this, the uses along MD40 include a boat dealership, a patio furniture warehouse, and some non-descript industrial facilities. In some of these industrial buildings, occupancy is difficult to determine. Additionally, there is solid evidence of the highway's current relationship with the trucking/shipping industry. Cheap hotels, motels, and gas stations are found regularly.

#### *Local speculation about the site*

In the case of a school typology, speculation about the site at the local level should respond to the general issues above, but also to issues that are more idiosyncratic, such as playing field design and campus gathering spaces. In response to the topographic data listed above, the design of this high school should absolutely search for the most appropriately disposed piece of real estate to

a sectional design approach. In brief, find a slope that naturally allows for a “bridge” level of adequate height to cross MD40. The overall activity in the topography does not appear to have any red flags, such as low points where unwanted drainage would accumulate, so that is not a concern.

Orientation should be considered in this order: [1] relation to the road [2] relation to nature [3] relation to sun. In order to fully take advantage of the sun, one would need to locate a linear building along the highway, an approach that does not work well with the goal of creating connections across the highway. As this arrangement is undesirable for the overall intent of the study, solar orientation should be placed accordingly. Relation to the road should be considered more important than relation to site in that it is truly the definitive element of the site. The nature is currently hidden.

*[Addendum: After the comments of the final review, this point could or should probably be reexamined. By responding to the road predominantly, the impression was given of a building that could be picked up and moved to any road on any site. Perhaps giving site orientation more weight would have been correct]*

Access should be approached one of two ways, both of which have potential flaws. First, one could make the predominant access point to the building site a side road. By locating bus drop offs, etc. along a side road, you get the students away from the higher speeds of MD40 and in theory create a safer environment. However, this will add likely such an influx of traffic (particularly

in the afternoon) that, unless the road is new, it will likely be unable to handle. The second option is to locate the main access point off of MD40 directly. This would make sense from a volume standpoint as the highway is sized for a lot cars/buses. It would also make sense as wayfinding would be easy for most travelers. The MD40 access point would have the disadvantage however that you can only access it traveling in one direction on the highway. In order to access it from both directions, a turn lane would need to be introduced that would be a menace to current traffic patterns.

As intimated above, the zoning and context need some changing. Zoning in particular should be updated to allow for residential uses of higher density near the highway. Also, to invigorate the highway in the present day, business and light industry uses should be subjugated to commercial and institutional uses. Industry in this area is simply not able to support the highway as it once was.

Playing fields are a difficult puzzle to approach for this thesis as one of the goals in siting is to create a school that engages its site. Also, planning a campus that does not require the traditionally huge parcel of land which is becoming extinct in the suburbs is fundamental. Playing fields, however, have a set dimension. One cannot easily reduce the overall size of space needed for playing fields unless one is able to stack or share fields. As this is a single school endeavor, sharing fields is tough to justify. Also, stacking is difficult based on the sheer numbers involved. For example, if one were to build a regulation soccer field on top of a building, the footprint of that building would need to be

approximately 80,000 square feet. Such a compromise puts the overall goals of limiting the building footprint into dire straits.

While shrinking fields is difficult, engaging the fields is more reasonable. One desirable technique would be to wrap a prominent field (aka football) with building program to create a stadium-type atmosphere. The opposite would also be an alternative. One could buffer a school from parking and road activity by creating a greenbelt of field surrounding it.

The concept of campus gathering places is also a unique site consideration as there are a number of gathering place types and uses. First, provision should be made for functional gathering places including covered waiting areas for students stuck in inclement weather and outdoor auditorium spaces for organized assemblies/rallies. Attention should also be paid to informal, more intimate, spaces for small groups of students to gather and socialize.



## Chapter 8: Conclusions

May 10 , 2008 – Three Weeks after Final/Formal Review

Site Conclusions

Over the course of the design process, the location chosen to site the building proved to be more prudent than first suspected. This conclusion primarily comes from recognition of potential in the site that was not originally considered. In retrospect, the strongest impetus for selecting the building's site was the issue of MD40 acting as a barrier that needed crossing. This goal was accomplished. However, were the idea of making connections across MD40 not of any consideration in the discussion of siting the building, the same site could have been considered for another reason. Often times, the timeline of school development runs as follows: [1] a strong community grows too large for its school facilities, [2] as no site of size is available within the community, a site is selected on the undeveloped periphery, [3] a school is built, [4] houses/developments are built around the school, [5] the population spreads out or outside populations come in. However, in this case the site selected is not peripheral. It is a site already between communities that was once of great esteem but now has lost much of its original value due to the interstate drawing traffic away. The region needs new value, something a school and the resulting housing can provide. Currently, the site is well served by a nearby water amenity, park amenity and shopping amenity that are wasted on a light industrial and commercial use. A change would be wise to make best use of these beneficial circumstances.

To this end, the thesis was not served well by a lack of two explorations: [1] context, and [2] a community master plan. In terms of theory, one could argue the merits of this region being transformed to a mixed use community with a large residential component. However, without a sense of the bulk of the buildings that result, it was difficult to evaluate the school's bulk related to context. Compared to the sparse, existing conditions, the school building would look to be a monster. It was conceived that mid-rise housing would be an ingredient in the development solution along MD40, as high population numbers are expected due to BRAC action to the north. If this were designed, the site selection would be bolstered.

Likewise, without a master plan for community development north of MD40, it is difficult to convince any of the value of a building as connector. If a community to the north was, for example, planned with a green space or pedestrian/biker friendly avenue running from Philadelphia Rd. to Red Lion Rd., the value of the school building connecting residents to green space would be strengthened, for there would be a straight line connection for a greater sphere of residents to get to the school and the amenities beyond. Extending Joppa Rd. (a consideration some weeks ago in the process) would also enhance connectivity between the school and surrounding communities, as well as improve traffic flow. Also, considerations related to support schools in the area would benefit from actual siting in a master plan. It has been a consistent thought during the thesis process that a new middle school would be sited on the south side of MD40 a short distance away from the high school. With this location, field space and

parking in the structured garage could be shared, further enriching the sustainability of the thesis. Not mapping this thought on paper leaves a void.

### Program Conclusions

The primary conclusion related to program is that the thesis would have been better served by a more unique appraisal of what the building actually is. The goal was community involvement, but the methods for getting there were hopeful and vague. In retrospect, describing the school as a Community Learning Center (CLC) would have been a more fruitful approach. In many ways, the school as designed has the tools to function as a CLC, but were the program considered wholeheartedly as such from the start, better results would have followed. Another alternative, which was brought up at the final review, was considering the program as a town center more than a school. School program could and should be considered a component of this, but perhaps in place of the vocational elements of the school, municipal elements of a community could have been added. For example, post offices have historically been the key to keeping small town centers viable. If a post office were added to the avenue level of the school building, it would more readily ensure activity on the pedestrian level than proposed school-focused, vocational activities, such as culinary arts.

### Architectural Conclusions

The resultant architectural solution to this thesis endeavor is memorable (or brandable), creates a civic space in the pedestrian avenue, achieves a transparency between the student and the community around, and stacks a lot of

program into an efficient mass. It is also out of scale to both the pedestrian between buildings and motorists passing underneath the building on MD40. A few reactions come to mind. First, perhaps the parti selected and the amount of program inserted into it were incongruous. If, for example, the top level were removed and the student population was reduced accordingly, the solution as designed may have been more reasonably scaled. Second, much of the success of this design scheme relies on articulation of detail that was unexplored in this thesis. On the exterior skin, articulation of the curtain wall façade needed to be examined on a pane by pane basis, perhaps varying the level of transparency of glass or controlling the pane proportions better. Likewise, the louvered sun/sound control construction should have been pulled back in some areas to allow for more variety in lighting and appearance. Color on walls beyond the wall would also have been a worthwhile exploration as it would reduce some of the cold, institutional character of the exterior skin. All of these moves would aid in reducing the perceived scale of the building from the outside.

Along the pedestrian avenue between buildings, a similar approach is needed. The entrances to the vocational clusters, in particular, would have benefited from more care at creating a human scale experience. This would be accomplished through, again, some work with the storefronts at each entrance. Also, articulation in the masonry, canopies or awnings, the addition of human scale accessories like benches or furniture, and signage would help. As described previously, if the height of the building was reduced from four to three stories the

railed overlook could have been 15' above the avenue level instead of 27'. This would have helped the scale miscue profoundly.

There was one prominently designed interior space in the thesis. It was the student commons terrace with stairway. It also struggled with scale. The space was designed with two functions in mind: service as a small, informal assembly space and as a "watering hole" for students to meet and gather. In achieving the scale of the former, the latter suffered. The resulting space was too big and too sterile to be a good place for student gathering. Furniture would have helped in the rendering, but not enough to hide its poor design. If the height to be traversed by the stairs in the space were less than the 25' that was the reality, it may have been more successful as well. Such a large height, in the end, was not able to be overcome.

The exposed structural system as designed was not successful. Scale was an issue, as was believability and physical functionality. A key factor in this was the structural expression departing from the truest diagram of bridge design. The final design resembled a lukewarm hybrid between a truss bridge and a suspension bridge, which while reasonable, was probably a poor decision. If a truss bridge was the intention, the stanchions should have been cut down. If the stanchions are most desirable, make a suspension concept work and get rid of the heavy structure. One of the most egregious sins was the avoidance of design of the "cross" structure, as it was difficult to bring in line with other design intentions. If a suspension option were pursued, this would not have been needed structurally (as I understand the diagram for suspension bridges). Or one could

have taken the third approach, and make a building with no reference to a bridge whatsoever. Hide how the building crosses the highway inside, as other examples have done.

The site architecture, which mainly took the form of playing fields and pathways seemed to work out well. A number of enjoyable field experiences were created. A baseball diamond with a watery target over the outfield fence would be an exciting environment for a young player. Likewise, the football stadium with “curb appeal” to MD40 would make for an exciting community event. Motorists passing by would see the field lit up with lights and excitement as they pass beneath an illuminated glass tube school building stretching across the street. Accessibility and connection to the water was also successfully handled through the community pier, useful for launching boats or simply meeting and talking with friends. A language of furnishing including covered walks was thought of and minimally noted in the final design, but there is opportunity for it to be implemented well with the layout of fields as shown in the site plan.