MOUNT GREYLOCK REGIONAL HIGH SCHOOL: PLANNING FOR RENOVATION OR RELOCATION

FINAL REPORT

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I. Project Summary

This project allowed a team of four of us, from Williams College, to evaluate the renovation or reconstruction alternatives for Mt. Greylock Regional High School. After examining the site, we decided to focus on the use of spaces both inside and outdoors. The MGRHS Building Committee steered us in the direction of figuring out the costs and benefits to the school for a variety of renovation options, from a simple 'no construction' to different size renovations or total reconstruction of a new school. We surveyed the faculty, staff and students in order to gather opinions from the people who use the space the most. We asked them about the current condition and importance of indoor and outdoor spaces, as well as questions regarding potential future uses and needs of the school.

In order to begin to understand the possibilities for a renovation or reconstruction of MGRHS, we examined several case studies of other newly renovated/reconstructed schools in Massachusetts, as well as looking at the facility studies completed in the early 1990s of MGRHS. Possibilities of green technology/energy (and related funding opportunities) were also researched into as potential improvements for the school.

Throughout the process, it was important for us to keep the health issues of the current school at the top of our priority list when evaluating and discussing the different alternatives. The sustainability of the physical attributes of the building as well as the physical and psychological health of the faculty, staff, and students were also considerations that were important to us. As the surveys revealed, several spaces indoors need significant improvement in either a renovation or reconstruction.

After evaluating each of the different alternatives, we concluded that a total reconstruction would be most beneficial to MGRHS. We would like to take this opportunity to encourage the Building Committee to seriously consider a complete reconstruction for Mt. Greylock Regional High School.

II. Physical Site Description

Mount Greylock Regional School is located on a 114-acre lot of land on the west side of Cold Spring Rd (Rt 7), north of the "Five Corners," the junction of Rt. 43 and Rt. 7 in Williamstown. The lot lies in a Rural Residential 3 (RR3) zone. Much of the land is open fields, including athletic fields and meadows, and the school building itself sits in the middle of the open area. There is a 1500'-square portion of the lot that extends west from the school building, and the western half of this piece is wooded with several well-established cross-country running/ski trails. The property flanks two private house lots adjacent to the highway. The parcel of land is bordered by woods to the north and west and by trees to the southwest and Rt. 7 along the eastern side. The land is mostly flat except in the far southeast, where it drops off from the level, and at the northern edge where a small hill rises. The field in the northeast corner of the lot is often soggy (yet is not indicated as wetland as far as the orienteering map shows), and there are several wellheads on the property, which place much of the lot in a wellhead protection zone. The only major building besides the school is an old airplane hangar, left from when the land used to the Cole Air Field, that lies to the east of the school building near the private house lots. This hangar is now used as storage for the school. A drive extends west from the Rt. 7 towards the school and branches off to an expansive parking lot in front of the school building. The lot has prime views of the entire Greylock massif to the east and the Taconics to the west.

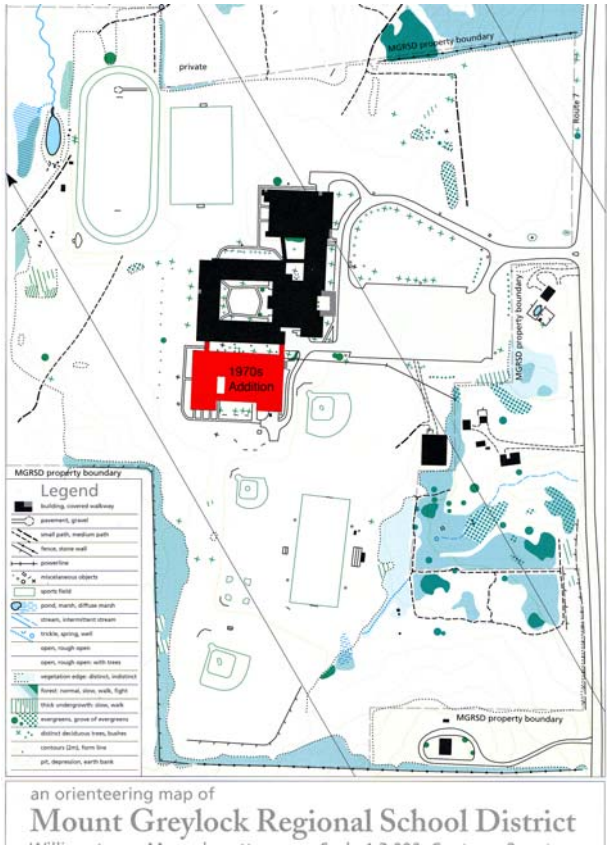


Figure 1

The school building itself has an area of about 180,000 sq. ft. It is a single-story building, comprised of rooms off long hallways (in square patterns) that surround several courtyards. It is both a middle school and high school. The building has multiple large-scale physical infirmities, including the boiler system, which is approaching the end of its useful life and is currently in need of replacement, and the ventilation system – some rooms in the school are vacant because of low air quality.

Figure 2

Besides these major issues, many of the specific rooms in the school are inadequate (outdated or deteriorated), including the gym locker facilities, the auditorium, the cafeteria, and the science labs. Furthermore, some of the classrooms have no source of natural light. The building's physical condition is, in other words, in need of immediate attention, along with the HVAC (Heating, Ventilation, and Air Conditioning) systems.

III. Site History

Mt. Greylock Regional High School (MGRHS) is located at 1781 Cold Spring Road. Previously the land on which the high school now exists was the Cole Field Air Field; the hangar for the small planes still exists on the property. Donald H. Cole also used part of the land as a farm.

On June 1, 1959, the site was selected for the new regional high school and bought from the Coles on April 4, 1960. It was decided to combine two school districts (Williamstown and Lanesborough) into one in order to maximize resources and opportunities for students, as many school districts did in the 1960s. The school opened for classes on September 11, 1961, for 818 students and 47 teachers. Everything was open for the first day of class except for the gymnasium which opened in November.

In 1967, a plan to enlarge the school to facilitate for a capacity of 1365 students was drawn up. In May 1968, ground was broken for the addition of new classrooms, laboratories, library and other special

facilities. Due to a two-month strike during the spring of 1969, the new classrooms and laboratories were open for use in September 1969, but work continued during the fall to finish the rest of the addition.

Recent renovations to the high school have included a 21'11" x 46'8" greenhouse which was moved from the top of the Williams Biology Dept. in early spring 1998[1], a storage area within the old airplane hanger to accommodate for student use and ski storage, the change of an existing storage room within the high school to a handicap bathroom in 2003, and a major roof repair in 2004. An assessment of a complete roof repair was completed in September 2003 and it was repaired in 2004 for about $500,000 dollars.

Several abutters will need to be informed throughout any process of renovation or reconstruction. To the north of MGRHS is the Sweetbook Nursing Home Inc., a continuing care facility. On the east side, cutting into the MGRHS property off of Rt. 7, are two single-family residences. The larger one of the two properties was the residence of the Cole Family until 1995 and has a rebuilt animal barn which is currently owned by Bill Pinakieski. To the south there is land owned by the Paradise Farm Corporation that is under the Agricultural Preservation Restriction as of 1983. There are two single-family residences to the northwest of the property[2].

IV. Research Plan

In order to evaluate the short-term and long-term options for MGRHS, we completed a number of measures.

We interviewed several teachers who have been at MGRHS for an extended period of time in order to gauge the immediate issues that the school is facing, as well as with the current Superintendent Mark Piechota. Throughout the process, at least one member of our team attended the MGRHS Building Committee meetings which were held and will continue to be held the 2nd and 4th Monday of every month.

On Wednesday, March 16, the team met with Paula Consolini to discuss the survey conducted by the Williamstown Elementary School. The MGRHS Building Committee has requested that we not survey either the Williamstown or Lanesboro communities before more background work is done and the Building

[1] Hank Art, Williams College.
[2] Williamstown Town Assessor's Office property records. Williamstown MA, 01267.

Committee is more informed about the possibilities facing the school. However, we were free to evaluate the school community itself and conducted a survey of student and faculty/staff opinions on current and potential space use within the building. We distributed these surveys in the 2nd week of April, before the students had their spring break.

We also reviewed several case studies in order to come up with the best suggestions for the MGRHS Building Committee. Using the Williamstown Elementary School and other school renovation plans as resources, we took into consideration their application to the MGRHS project and experiences to provide an example for MGRHS. Another focus of our research was attentive to 'green building' options especially in regard to energy and water improvements. For site history and site description, we used information from the House of Local History (in the Williamstown Public Library) and the Assessor's office in the Town Hall.

We used the collection of our research on the potential costs and benefits of each alternative to rank the feasibility of each short-term and long-term options in order to determine the best solution to the current problem. We researched possible state funding alternatives and non-state funding such as grants available for the use of Green Technology in School Buildings.

List of Contacts:

Andy Hogeland – MGRHS Building Committee Chair

Robin Lehleitner and David Livernois – MGRHS Faculty

Ann McCallum – Williamstown Elementary School Resource

Paula Consolini – Williamstown Elementary School Resource

Mark Piechota – MGRHS Superintendent

Members of the MGRHS Building Committee

Ford Spalding, Libby Yon – Dover Sherborn Regional Building Committee Co-Chairs

John Holden – conductor of MGRHS Facility Audit, 2002

V. Project Background

The Mount Greylock Regional High School project is just underway (the Building Committee has only existed since early March, 2005). While there is a clear awareness of the problems facing the building, these issues have been largely ignored in the school's recent history. Due to deficiencies in funding and the lack of a long-term plan for the school, problems have been addressed individually in a retroactive manner, and no major renovations have been made to the building since the 1969 addition of the high school wing. Several evaluations of the facilities conducted in the past decade or so include an Air Quality Reassessment compiled by the MA Dept of Public Health in 2003, an ADA (Americans with Disabilities Act) Survey prepared in 1992 by a local consulting group called The Co/op, and a Facility Audit in August of 2002 conducted by Focus Facility Services. These reports all found the existing school building and its facilities (sometimes dangerously) deficient. The Air Quality Reassessment proposed a replacement of the current ventilation system (it speculated that the system was past the point of feasible repair) and the use of interior room uni-vents to increase the distribution of fresh air. However, despite an understanding of the serious health problems associated with poor air quality, the school has been unable to follow these suggestions due to budgetary constraints. The ADA Survey pointed out multiple places in which MGRHS lacked compliance, and while the high school has changed some of these areas in response to this report, many of them remain. Perhaps the most thorough of these reports, the Facility Audit, set out a number of necessary repairs amounting to $1,482,300. These included improvements in the roof, the ventilation system, the library's air conditioning unit, the water tanks, the hot water system, the AC systems, the fire alarm systems, the boilers, the emergency generators, the temperature control, and the electrical distribution panels. Of all of these proposed renovations, however, only the roof replacement and the hot water system upgrade were completed.[3]

Figure 3

[3] Information largely from the three aforementioned reports as well as conversation with head custodian, Alan Christenson on 2/15/05.

The recent controversy over the waterline (perchlorate was found in the school water at unacceptable levels of 1-12 ppb), however, seems to have sparked more general debate and discussion over the more general future of the school building.[4] While the town ultimately denied the request for an $875,000 bond and permission to extend the municipal waterline from the center of town to serve the area along Cold Spring Road, the failed proposal served to publicize the serious problems that MGRHS faces in the near future. Currently the school's well system is not only contaminated by perchlorate, but is also unable to support a sprinkler system (however, due to the fact that the high school is a 1-story building with ample emergency exits, the sprinkler issue is not a pressing concern).[5] The Mount Greylock Regional High School Committee has been exploring alternate options for managing the perchlorate issue such as cleaning up the water supply and securing a new water source. According to the Committee, however, the former option is just too expensive for the school. The utilization of a new water source, which would also necessitate the construction of a storage tank, was recently undertaken at the Monument Mountain Regional High School in Great Barrington at a total cost of $750,000.[6] MGRHS had secured a state grant of $286,000 to cover its portion of the joint public/private venture waterline extension costs, making this option clearly the most cost effective for the school. The research on potential sources of water for the high school will, however, not end with the rejection of this proposal, as a working sprinkler system is a necessary prerequisite to any renovations the school plans to make in the future.

Figure 4

The water problem is, however, only one of the many that the Building Committee will face in its attempts to determine what is best for the school's future. If the committee hopes to significantly lengthen the life of the current building or construct a new one, it will have to look at efforts made by other schools, and not to its own past, for instruction. No matter what choice MRGHS makes (renovation vs. new construction, green vs. not green, etc), it will have to do so with more sensitivity to the long term. Because of the relative newness of the project, we chose to focus on a number of schools in MA which have recently undergone

[4] Our client and the chair of the Building Committee, Andy Hogeland, became involved in the school project due to playing an active role in the waterline controversy.
[5] Hank Art, Williams College.
[6] Marcisz, Christopher, "Water Line Scuttled". Berkshire Eagle, Nov 10, 2004.

renovation, reconstruction, or green construction projects to look for information and advice on this long, difficult, and financially extravagant process.

1. Case Study 1: Dover-Sherborn Regional Schools, Dover, MA
Ford Spalding and Libby Yon, Building Committee Co-Chairs

Both Mr. Spalding and Mrs. Yon were delighted to speak with us regarding the recent construction projects in the Dover-Sherborn Regional School district. These plans included a brand new middle school, a heavily renovated high school, renovations to the commons area (including the auditorium, cafeteria, and band equipment), and improvements in the fields and grounds. The Dover-Sherborn Regional Schools Building Committee website provides a breadth of information (www.dsbuilding.mec.edu) on the project including photos of the grounds and facilities at every step of the way, drawings and plans, news and notices, meetings, team members, and this timeline for construction:

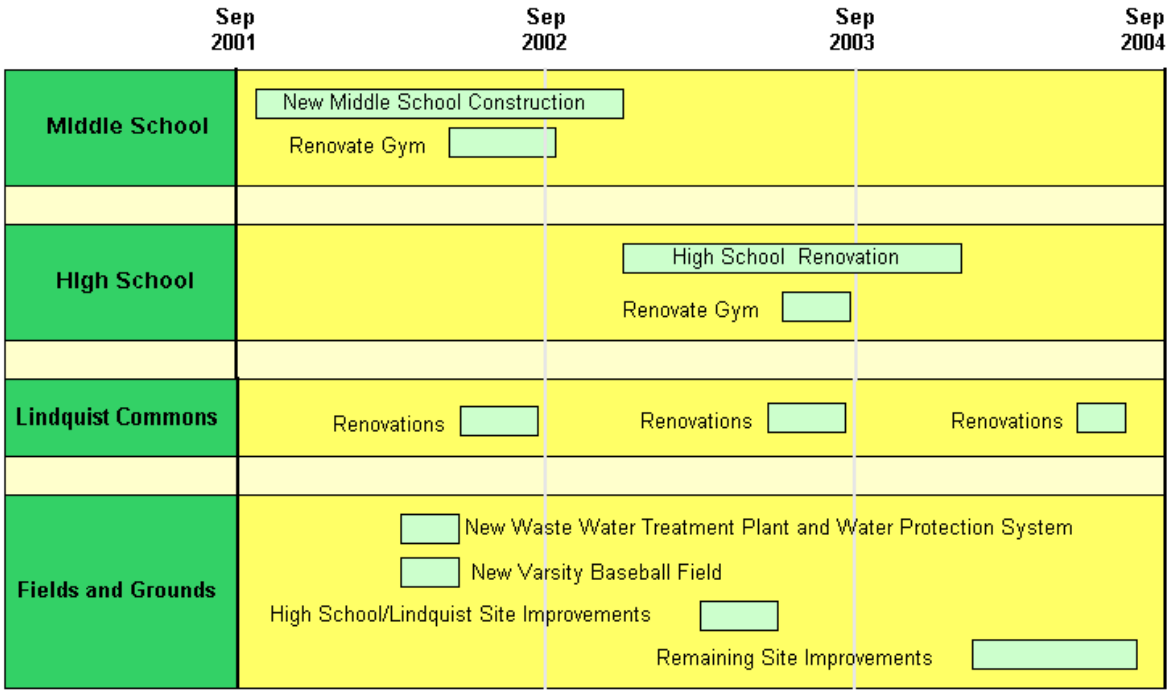


Figure 5

Both Mr. Spalding and Mrs. Yon were extremely proud of the project (which was well received by students and community members alike). Each of them attributed its success to the high degree of community involvement and the hiring of a project manager who oversaw the details of the project, assuring that all regulations were met and that each team member was satisfied with every stage of the planning (he will "help you all the way through"). The school received a total of 57% of its funding from the state, but both

Mr. Spalding and Mrs. Yon stressed that this figure would be much higher in the towns with demographics of those like Lanesborough and Williamstown.

Mr. Spalding and Mrs. Yon stated that a cost-benefit analysis of the middle school, constructed in 1962, showed that it clearly needed reconstruction. However, the High School, built in 1967, was constructed much more soundly and thus would have cost more to tear down and build anew than it would be to renovate. The Mount Greylock Regional High School opened in September 1961 with a south wing added in 1968-1970. While it is not feasible for us to accurately gauge just how much it would cost to renovate vs. reconstruct MGRHS, we can learn from this case study. If the Dover-Sherborn Middle School was built in 1962 and was very clearly in need of complete reconstruction (poor building quality all around), then it is likely that the portions of Mount Greylock constructed in 1960-1961 may be in a similar state of disrepair. Likewise, it may make sense that since the Dover-Sherborn building constructed in 1967 could be salvaged, the south wing of Mount Greylock built in 1968-1970 might not need to be torn down either. Here is a drawing for what this new facility for Dover-Sherborn will look like:

Figure 6

The Dover-Sherborn Regional Schools case study, because it was so successful, is helpful in determining funding sources and recommending modes of action to the MGRHS project. Both Mr. Spalding and Mrs. Yon stressed repeatedly that the fundamental key to success (beyond hiring a project manager, which is now required by the MSBA – Massachusetts School Building Authority) is including community members in the planning and construction of the schools. Mr. Spalding noted that the projects received rare

widespread community support in all 3-4 of the annual town meetings because the Building Committee consistently appealed to all members of the community in every aspect of the planning. The Building Committee convinced the seniors that "it was a community resource" (i.e. that they could watch movies in the auditorium on Saturday afternoons, etc), and the seniors ended up being the project's largest supporters! Further, Mr. Spalding noted that "the middle school was designed by the middle school faculty"; by including every portion of the community in the plans for construction, the Dover-Sherborn Building Committee nearly eliminated the possibility of running into trouble when they asked for funding from the town. This information, as well as suggestions with regard to funding and construction processes, is helpful to us in determining which building alternative is most appropriate for the MGRHS and surrounding community.

B. Case Study 2: Williamstown Elementary School

The Williamstown Elementary School District recently constructed a new high performance school that is a good example of an educational building with a comprehensive plan for the future. The $14.5 million project's primary aim was to increase the school's energy efficiency and environmental compliance. The new school was built in a new location, reduced in size from 103,000 ft^2 to 89,000 ft^2, and designed as a compact two-story building in order to maximize open space on the property. Heat recovery ventilation, enhanced insulation and low-e glass windows were used in order to increase the building's energy efficiency and 24 KW photovoltaic cells were installed on the roof. In order to install the photovoltaic cells and construct a solar greenhouse, the school received a $568,300 grant from the MA Technology Collaborative as part of the Green Schools Program. The school anticipates that the photovoltaic cells will save them $36,099 per year on energy costs[7]. While this project is clearly exceptional, it could serve to assist MGRHS in making a high-performance plan of their own if the Committee deems this the best option. It also provides evidence of both support for and awareness of green building and energy technologies in the town of Williamstown, as well as serving as a useful tool to educate the public about the benefits of green design.

Figure 7

C. Case Study 3: Monument Valley Regional Middle School

[7] Elementary school information from www.williamtownelementary.org and www.mtpc.org/renewableenergy/green_schools.htm.

Monument Valley Regional Middle School is in the Berkshire Hills Regional School District, which includes the towns of Stockbridge, West Stockbridge, and Great Barrington, MA. District voters in July 2002 approved a construction project for a new middle school that specifically called for green building design, including $300,000 for "Green School Initiatives." Consulting with local environmental organizations, the Building Committee focused on maximizing high-performance and green initiatives in the project budget. They applied for and were awarded the MTC (Mass. Technological Collaborative) Construction Assistance Grant for the project in December 2002, similar to the Williamstown Elementary School. The new school, since completed, incorporates green technologies and methods throughout its design including: low-impact landscaping, renewable and nontoxic interior materials, extensive day-lighting, efficient electricity use, ventilation, and heating (in particular a geothermal heat pump system). The Monument Valley project's many green initiatives illustrate another wide source of possibilities for a high-performance plan for MGRHS, and its success demonstrates another case of widespread community support for environmentally sensitive construction, a recent revolution in building.

2. Case Study 4: Edgerly Early Childhood Development Center

The Edgerly Early Childhood Development Center began exploring green building techniques in search of finding ways to diminish energy costs, and so from the beginning of the planning process projections of energy savings (studies projected a 33% reduction in energy costs) were essential to the center's success in reducing energy expenditures.

The school's main focus was on ways in which day-lighting techniques could reduce energy usage both in electricity and in heating and cooling. Classrooms in the Edgerly Center utilized a clerestory lighting system as well as having traditional windows. Small adjustments such as multi-circuit switching to allow lamps several settings of brightness, highly reflective fiberglass ceiling tiles, vertical blinds on the windows, double glazed windows to reduce heat gain, interior light shelves on the south side to diffuse light, and indirect fluorescent lighting all contributed to huge anticipated energy savings. The rooms were also equipped with interior light dimmers which would adjust the rooms lighting in increments of 5% (to avoid abrupt changes) in order to accommodate increased day-lighting in the room. All school lights were also set to turn off automatically when rooms were uninhabited.

The school also chose to use an R-5 insulation material in order to decrease heat loss in the winter, to operate the HVAC system only when the school was open (this allowed them to reduce the chiller size by 50%), to install a 30kWp system of photovoltaic cells on the roof, and to use recycled materials (fly ash) to strengthen and lessen expenses in concrete construction. In order to increase the indoor air quality, the school chose to use vinyl-backed carpeting to discourage mildew, fiberglass ceilings, and only wood that was treated without arsenic or chromium. The Edgerly center was also able to save by utilizing an in-ground infiltration/detention system in order to decrease site runoff by distributing roof runoff back into the water table, and it also used low flow toilets to decrease sewage waste.

The school's architects noted that an education program to allow school officials to understand the importance and potential financial success of green design was essential to the project. They also noted that many of the measures that will save the most energy require significant funding and major system changes, and suggested that these be included from the very beginning (it is easier to think big and then scale down as the process goes on than to try to add in large expenses late in the process). They also suggested applying for utility rebates early in the process in order to get a more accurate picture of funding and financial issues before the designs are completed (these rebates have the potential to hugely influence budgetary decisions)[8]. These recommendations are all helpful in determining how Mount Greylock can best incorporate green building in its construction project.

3. Case Study 5: South Street Elementary School

The South Street Elementary School, in Waltham, MA, houses 600 students, and set out to make a new school prioritizing a full sized gymnasium, a 250 seat sub-dividable cafeteria, and a media center. The architects of this school wanted to address environmental issues from the very beginning, and incorporated many of the same measures as the Edgerly Center. Focusing on day-lighting, the school verified that each classroom had at least one operable window and provided 2/3 of the interior corridors with clerestory lighting. The South Street School also used sensors to control dimming ballasts, light shelves in the south

[8] Massachusetts Technology Collaborative. "Collaborative for High Performance Schools: Best Practices Manual- Volume I Planning" http://www.mtpc.org/renewableenergy/green_schools/chps_standards.htm.

side, and louvers which help facilitate ambient and diffuse light. Instead of using vinyl tile for uncarpeted areas they chose to use linoleum instead (this is beneficial for IAQ), selecting a 'green' carpet with low-volatile organic chemical emissions as well as zero VOC paints on all interior locations. In order to maximize the daylighting possibilities, the school was oriented on an east-west axis which maximizes the number of south facing windows in order to increase daylight. The school chose to use white, low-albedo roofing in order to reduce the heating and cooling load, as well as coating all windows with low-emissivity coating, further reducing both thermal losses and solar gains[9].

VI. Community Profile

The renovation of Mount Greylock Regional High School will most immediately affect the communities it serves, the towns of Lanesborough and Williamstown. These towns lie within Berkshire County, Massachusetts. The High School, located on the outskirts of rural Williamstown, serves the two communities with a combined population of about 11,500 residents.

Figure 8

The demographics of Williamstown and Lanesborough are strikingly similar. While Williamstown has a larger overall population (8,424 vs. 2,990), both towns have more females than males. Additionally, Whites make up the far majority of residents, exceedingly so in Lanesborough with a very high 97.4% (US national average is 75.1%). Williamstown proves to be slightly more diverse at 90.8% White with African Americans at 2.7% and Asians at 3.1% still quite far behind. Households with children under 18 years (thus of school age) numbered at 425, or 35.3% of the total households in Lanesborough and at 705 or 25.6% of the total households in Williamstown. It is fitting to think that these members of the community would be those most concerned about renovations to the public school (although community concern should not be limited in this regard, of course).

[9] *Ibid.*

As we will address the educational system of the aforementioned communities, it is important to look at the education of the residents within these communities. In doing so we can evaluate the relative importance of education to these citizens and better understand the individuals we intend to serve. In each of the towns the percentage of the population 25 years and older with a full high school education is relatively high compared to the national average of 80.4%. In Lanesborough this amounts to 90.3 % and in Williamstown slightly less 88.8%. In contrast, while Lanesborough's percentage of the population with a bachelor's degree or higher is closer to the national average at 25.8% (national average is 24.4 percent), 53.6% of Williamstown residents are so educated.

It is further necessary for us to assess the economic status of the Lanesborough and Williamstown communities. In doing this, we can establish the practical capacity of these residents to devote resources to educational improvements beyond any emotional desire to do so. In Lanesborough, 74.1% of the population over 16 years of age is in the labor force. In Williamstown the much lower 55% can most likely be attributed to the educational institution of Williams College and its 1,945 students. In Lanesborough the primary areas of employment are in education (health and social services), retail trade, and manufacturing, involving 24.6%, 15.7%, and 12.4% of the population respectively. Similarly, education (heath and social services) involves the largest percentage of the work force in Williamstown, but this figure is much higher at 51.3%, again most likely due to Williams College. Arts, entertainment, recreation, accommodation and food services (essentially tourism) make up the second most popular industry category for Williamstown residents at 11.3 percent. This can also be attributed to Williams College and surrounding attractions such as the Clark Art Institute and Mount Greylock.

Overall Williamstown is a more affluent town than Lanesborough. The median family income for Williamstown is approximately $67,589.00 per year while in Lanesborough this is significantly less at $51, 887.00 per year (just above the national average of $50,046.00 per year). Accordingly, 16.7% of families with children under 5 years old live in poverty in Lanesborough, compared to a much smaller 3.4% in Williamstown. The differences in income may play a role in the drive and ability of residents to donate time, energy, and funds to the revival of Mount Greylock Regional High School.

The school itself has 734 students and generally reflects the demographics of the communities it serves: while the majority of students are males (incongruous with population data), nearly all are White compared with much smaller Asian, Hispanic, and African American populations. The school serves grades 7 through 12. There is a general increase in population among the grades with the 12th grade at 115 students, the 11th at 121, the 10th at 138, the 9th at 142, the 8th at 144, and the 7th at 142 (this is further supported by the size of previous year's classes: the class of 2002 graduated 108 students and the class of 2003 graduated 110).[10] This increasing population trend should be taken into consideration when assessing potential renovations for the school.

The school boasts a formidable reputation with its excellent and devoted 60+ member faculty. Two of these individuals hold doctoral degrees, 46 have master's degrees, and 14 have bachelor's degrees. Higher administration consists of a Superintendent/Principal and Assistant Principals for the High School (grades 10-12) and Middle School (grades 7-9). The average SAT scores reflect the high standard set by the faculty with a 570 Verbal average and 561 Math average (above the 518 and 523 Massachusetts averages and well above the 508 and 518 National averages). Further, from 2002 to 2004 the number of students attending four-year institutions increased, while the percentage employed decreased correspondingly.

The communities of Lanesborough and Williamstown take great pride in the quality of their educational systems. With recent budget cuts from the State of $550,000.00 between 2001-02 and 2004-05 (Mt. Greylock Regional School Financial Projections, Prepared by Williams College, February 2005) and an increase of $664,000.00 in the amount required to spend in special education, the school system is struggling to maintain its varied and rigorous academics with an equally rich extracurricular program. According to the US Census Bureau, Massachusetts ranks 49th in the list of states for kindergarten through Grade 12 in education spending ("Students to Bosley: 'Be our voice'", Berkshire Eagle, 4/18/2003). An article in the Berkshire Eagle by Susan Bush in April 2003 cited a chart produced by the Massachusetts Budget and Policy center that noted that "no state cut state and local spending more than Massachusetts" between 1979 and 2000. In light of this financial crisis it is no wonder that at MGRHS groups like the Greylock Assistance Project (The GAP Fund) and the Sustaining Educational Excellence (SEE) Fund have

[10] U.S. Bureau of the Census, Census 2000.

been created by parents and community members in order to remedy the salaries, course offerings, and activities demolished by the cuts in funding.

The Lanesborough and Williamstown communities are indeed struggling with solutions for the tight economics of their educational system. The faculty are increasingly disgruntled and frustrated at the lack of communication between the Mount Greylock Faculty Association and the School Committee. The economic strain makes them feel "undervalued and misunderstood", and the President of the Association stresses "the need for a clear, articulated vision for this school's future" ("Faculty Association calls for joint meeting with School Committee", The Advocate, June 13, 2001). Whatever the immediate cause, it is clear that the time has come for a remedy. The economic disparities between Lanesborough and Williamstown family incomes will undoubtedly play a role in the extent to which these residents can contribute to the renovation of the Mount Greylock Regional High School. How much and in what way they are able to do so is yet to be determined.

VII. Problem Identification and Scoping

A. Primary Project Objective

Through this project we will explore the best short and long-term options for renovation/reconstruction of the Mount Greylock Regional High School, given budgetary constraints, with an eye toward sustainability.

B. Client Goals and Problem Identification

MGRHS is in a clear state of physical deterioration. The ceiling leaks, the water and air are of poor quality, and the various facilities (such as the auditorium) are falling apart. This obvious need for renovation charged the Building Committee with the following goals:

1. to evaluate the difference in needs between a middle school and a high school
2. to assess the value in renovation vs. reconstruction – in stages or as one project
3. to identify various sources of funding

C. Scope of Work

Our team seeks to explore the short and long-term solutions for the renovation/reconstruction of the school in a sustainable way so as to minimize the environmental impact of the project (as per request by the Building Committee). Our client, the Mount Greylock School Building Committee, has charged us with evaluating the best and most economic alternative (as outlined above) in light of the following:

1. the site cannot be changed – any construction must occur on the present parcel of land (though a complete reconstruction would necessarily occur on a different location within this parcel)
2. the building, however it is renovated or reconstructed, shall remain single in story – this is easier for handicap access and since there is no lack of space, the School Committee does not see a pressing need
3. we should evaluate potential uses for the hangar area, currently used for storage by the ski team
4. we should seek and consider community feedback in the planning process
5. we should assess the feasibility of using this land/the project to fulfill a community function: this would both draw funding from various sources and increase the likelihood that the school will be a center of community activity, a place that people want to frequent.

D. Identification of Necessary Data and Information

We will make our assessments by determining the need for various structures, facilities, and programs within the school. To do so we believe it is important to address all members of the community, those with children in the school and those without, the teachers and administrators, and the students themselves. Once we have identified the most central subjects of renovation, we will examine a variety of alternatives for remedy, some with 'green' building, some without, in the light of their economic feasibility. Because financial concerns are so paramount to the success of this project, we intend to perform a cost-benefit analysis of each alternative.

VIII. Applicable Laws and Regulations

When looking at construction of a school, be it a renovation or complete reconstruction, the Building Committee must abide by the rules and regulations set in the Massachusetts General Laws and the Code of Massachusetts Regulations (CMR). Further, the handbook entitled "Designing and Constructing Public

Facilities" put out by the Commonwealth of Massachusetts under the Office of the Inspector General (currently Gregory W. Sullivan) is a helpful guide to the "legal requirements, recommended practices, and sources of assistance" involved in the development of public facilities such as schools.

These apply to all areas of construction primarily under 780 CMR 1-35. There are many relevant chapters that address issues such as the scope (101), applicability (102), maintenance (103), permits (111), and safety (123, 124) of a project. Chapter 3 of 780 CMR addresses the Use or Occupancy of a building, and under this section 305 looks at the requirements under the Educational Use Group. This code also addresses General Building Limitations (Chapter 5), Fire Protection Systems (Chapter 9), and Interior Environment (Chapter 12 – includes natural vs. artificial light, natural vs. mechanical ventilation, etc.). These laws do look at areas such as energy conservation and use of materials (such as wood, plaster, concrete, etc.). One of the more pertinent Chapters is number 34, the "Repair, Alteration, Addition and Change of Use of Existing Structures."[11].

Figure 9

School construction also comes under section 603 CMR 38 (titled "School Construction"). This addresses areas such as the "authority, scope and purpose" (38.01) and "general requirements: capital construction" (38.03). The requirements get quite specific. For example, under 603 CMR 38.05, Program Standards: Capital Construction, there are square footage requirements per pupil based on the necessarily configured planned enrollment (the MSBA suggests a footprint of approximately 135 ft^2 per middle school pupil and 155 ft^2 per high school pupil). The larger spaces such as libraries, cafeterias, and gymnasiums also have square footage requirements.[12] In renovating an old space or constructing a new school, the MGRHS Building Committee will need to assure its adherence to these regulations. An architect or project manager will assure that they are met.

[11] Commonwealth of Massachusetts. Code of Massachusetts Regulations, Trial Court Law Libraries. Last updated: January 26, 2005. http://www.lawlib.state.ma.us/cmr.html
[12] *Ibid.*

IX. Summary of Alternatives

A. Alternative I: No Renovation or Reconstruction

The current state of the building is, as explained in the site description portion of this report, exceedingly problematic. Deciding not to perform any renovations on the building, then, would only exacerbate both the inefficient and unhealthy qualities of the school building. While minor changes in usage and behavior within the school could lead to minor improvements (suggestions for improving air quality included the cleaning out of debris in the ventilation system as well as the removal of books, papers and furniture that block classroom vents, and a general higher standard of cleanliness might ameliorate the student restrooms, which were the most heavily cited 'worst space' in MGRHS based on student surveys), there is no indication that these improvements will solve the school's major problems.

The main benefit of this particular alternative is that it will add no notable additional costs to the school's budget. The hidden costs, however, of this alternative are high. To begin, the school will continue to operate as an unhealthy environment. The undeniably poor air quality (62.5% of the surveyed rooms contained CO_2 levels above the 800 ppm standard for public buildings and 84% were above the 600 ppm standard for school buildings),[13] has been linked to numerous health problems with the faculty (most notably in the windowless rooms). Recently there have been two cases of sarcoidosis, a lung disease that has nominally been linked to environmental concerns. The lack of drinkable water currently available on school property, and the cost of continued importation of bottled water to the school, is an additional cost of choosing not to complete a renovation or reconstruction. This alternative must also consider the high maintenance and energy costs of the school's inefficient mechanical systems (the 2002 Facility Audit suggested that the following systems were either inadequate or nearing the

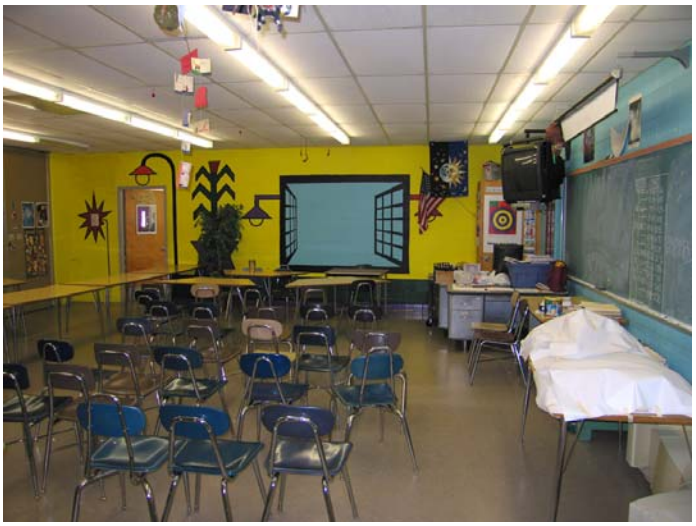


Figure 10

[13] For a more detailed record of CO_2 emissions see the 2002 Facility Audit performed by Focus Facilities.

end of their useful lives: the boiler system, water pumps, the HVAC system, the fire alarm system, the Air Conditioning units, the water tanks, the hot water system, the temperature control system). Continued maintenance and loss of energy through inefficient building materials and heating systems presents a serious yearly fiscal cost to the school that only adds to the existing physical and psychological effects of the poor air quality. The school is also currently not entirely ADA compliant, and the possibility of being sued by a student with a disability exists. Deciding to leave the building as is also incurs much less tangible costs such as the inadequacy of the facilities for advanced education; several teacher surveys noted the inadequacy of the science labs in particular, and while we cannot specifically calculate the psychological impact on students and teachers of perceived mistreatment or neglect, these are important and relevant considerations.

B. Alternative II: Minor Renovation

In a press release from 2004, Superintendent Mark Piechota elaborated a plan for a set of necessary renovations to the Mt. Greylock Regional High School building[14]. Stressing the structural soundness and general utility of the existing building (as well as a preference to maintain it), Piechota admitted the necessity of replacing both the ventilation systems and two of the school's three boilers. Replacements suggested in the facility audit and the indoor air quality assessment should be prioritized in order for the building to continue to function both safely and reliably. We would recommend, however, that the school consider a more holistic renovation, including all factors necessary to the building's continued functionality. While said renovation would not necessarily be concerned with aesthetic or programmatic needs of the school, it would necessitate an updated facility audit by an architect or engineer. The MGRHS Building Committee has taken the initial steps towards this audit, in order to designate which facilities must absolutely be renovated or replaced in order to prolong the building's life, and which systems and spaces do not require immediate attention. While it seems unclear which facilities aside from the boilers and the ventilation system *mandate* repair, any renovation will necessitate that the building be ADA compliant **(**an estimated cost of 108,700 dollars[15]) as well as perhaps incorporate a sprinkler system. Any renovation would also need to address the water problem (although this process is not under the authority of the Building Committee), yet unless there is a new construction and the school is re-sited, it appears doubtful

[14] Piechota, Mark. "Mount Greylock Regional High School News Release", November 29, 2004
[15] For more extensive analysis of MGRHS's ADA non-compliance see September, 1992 ADA Survey performed by The CO/Op Inc.

that any other renovations will impact the waterline problem in a significant way. Additional renovations recommended by the 2002 Facility Audit should be considered, but we advise performing a current facility audit in order to prioritize necessary renovations in order to minimize cost and maximize the extension of the building's life.

In order to fund these projects, it will be necessary to take out town bonds in addition to applying for funding from the Massachusetts School Building Authority. The building is structurally sound, supporting a modern educational program in compliance with the Massachusetts Department of Education and an anticipated lifetime of more than seven years (Dr. Piechota, in his optimistic press release, anticipated a 40 year lifetime for the building). Thus, it qualifies for a reconstruction process that is oriented to eliminating environmental safety hazards (such as the water problem or indoor air quality problem), to renovating the building for handicapped accessibility, to replacing or improving a heating system, or to equipping the building to be more energy efficient (any renovations to the heating system as well as the reduction from three to two active boilers would at least somewhat decrease energy costs).

Figure 11

This minor renovation alternative has more overall benefits than the previous one, offering a (significant, with luck) increase in the building's lifetime. The replacement of the ventilation system would significantly increase air quality in the building, and in combination with the waterline would eliminate the most significant environmental concerns. The replacement of the boilers offers the financial benefit of lowered maintenance and energy costs, and performing renovation work such as the installation of drives on the water pumps has the potential to receive rebates from the school's electric company, Mass Electric.[16] While there have been no comprehensive studies due to the 'complexities of indoor air quality,' the strong link between poor air quality and adverse health symptoms such as headaches, fatigue, respiratory problems, eye irritation, etc.[17] suggest that an improvement in air quality would lead to less student and teacher absenteeism as well as

[16] Facility Audit, p.5
[17] CHPS Best Practices Manual, MA Version, Volume I. March 2002. p.6

potentially improved performance. This endeavor, however, would incur fairly significant costs of approximately 1.5 million dollars without addressing the educational, programmatic, or schematic issues of MGRHS; it would attend to the physical safety and reliability of the building without paying much attention to what is on the inside. This alternative has the added cost of potentially preventing or hindering funding for additional renovations to the school building over the next ten years[18] while simultaneously neglecting to deal with many of the students' and faculty's most vocal concerns. This alternative, then, would render the building fairly static, making changes other than those listed above increasingly more difficult to make in the future.

C. Alternative III: Major Renovation

For a more substantial renovation, we would recommend an expansion of the minor renovation to accommodate student, faculty, and administrative concerns about the programmatic/schematic concerns in the building. In order to address these issues most effectively we suggest that the Building Committee conduct a space survey (similar to the one used for the Williamstown Elementary School project) of the whole building in order to identify and prioritize spaces that are heavily used as well as recognize spaces that are over- and underused. This space survey consists of a schedule completed by each teacher in a set time period of a week to see which classrooms are used and what extra spaces are integrated into the daily flow of the school. This survey examines the actual needs of teachers in order to establish the necessary amount of space for each class to function, whether in the classroom or in additional spaces throughout the school.[19] There are currently many open classrooms in the school, yet teachers complain about overcrowding in their classrooms[20], while the offices (most particularly those for SPED and guidance) seem unnecessarily large for their functions (one-on-one student interactions). As noted by Superintendent Piechota, although the school was enlarged 1960s to accommodate 1365 students (and now houses 734), many of the rooms are now used by SPED and as computer labs which were not considered when the renovation was

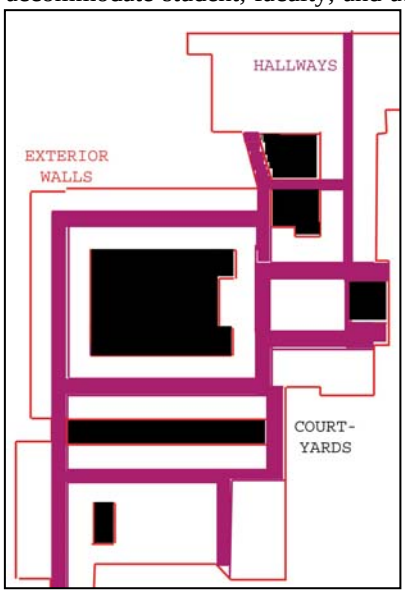


Figure 12

[18] Massachusetts School Building Authority. "SBA Legislation as of July 28, 2004. http://www.mass.gov/msba/Forms/SMALEG.pdf
[19] Interview with Paula Consolini. March 15, 2005.
[20] The need for larger classrooms was cited as a major concern by 11 of the 20 teachers surveyed.

undertaken.[21] In short, a redistribution of rooms has the opportunity to provide MGRHS with a more logical spatial distribution of functions. The major renovation, then, incorporates all of the elements of the minor renovation, but is more comprehensive in its spatial and programmatic concerns. A major renovation, however, would notably be tied to the existing structural walls (including interior hallway walls) as well as the decentralized courtyard system that defines the building's circulation pattern. While changes could be made in the walls between classrooms, no *major* changes to the layout of functions within the building would be possible.[22]

Our student surveys found that the spaces considered most problematic were the restrooms, the classrooms (in particular the windowless classrooms), the locker rooms, and the auditorium. We also found that a student lounge was the students' most desired addition to the school. Faculty were more concerned with an increase in access to technology, the creation of small, multipurpose rooms (for meetings, test taking, one-on-one work, etc), and the creation of larger classroom facilities to accommodate large class sizes. Several faculty members asserted a desire for an improved teacher's lounge or work area, noting in particular the lack of central departmental space (an amenity one faculty member claimed was a contractual agreement). Superintendent Piechota has publicly noted that the school is in need of a renovated auditorium space, an expanded front lobby to accommodate crowds, and updated science labs.[23]

Figure 13

While it seems feasible to examine all of these needs in the process of a major renovation, it is also important to take economic feasibility into account. Building Committee member Ann McCallum has noted that while renovation projects are no less likely to receive funding than new construction projects, often major renovations that involve the replacement of mechanical systems, the replacement of windows,

[21] Interview with Mark Piechota. May 5, 2005.
[22] Interview with John Holden, DATE?
[23] Piechota, Mark. "Mount Greylock Regional High School News Release", November 29, 2004.

and the creation of differently sized classrooms are actually more expensive than instances of tear down and new construction.[24]

A major renovation results in all of the same benefits as a minor renovation, but also provides several additional benefits. The major renovation has the advantage of involving student and faculty/staff needs explicitly in the planning project as well as considering the potential for a more efficient utilization of space.

Figure 14

This alternative also allows for renovation of academic facilities such as science and computer labs, as well as the incorporation of more flexible spaces that could serve a number of functions for faculty (suggestions for flexible spaces included a computer lab where students could be sent individually to work on projects, a room that would be open for make-up testing, smaller spaces for more intimate student-teacher interactions). This alternative has the added benefit of re-using the existing facility, a less wasteful process than tearing down to reconstruct. This alternative is limiting, however, in that is necessitates use of the existing structure (problematic both in the circuitous nature of the existing floor plan and the energy-inefficient materials and lack of insulation in the walls, floors, and windows) and is potentially more costly than the construction of a new building.

D. Alternative IV: Total Reconstruction

A new construction project would involve tearing down the existing school building and finding a new site for the school on the existing land parcel. The new site for the school should take proximity to the non-contaminated well into consideration in addition to being oriented to the south for the maximum utilization of daylight. Environmental concerns such as wetlands existing on the land plot should also be taken into consideration, as well as the current and potential future locations of the sports fields and parking lot. New construction would allow for a complete redesign of both the interior and exterior space of MGRHS,

[24] Information from interview with Ann McCallum. April 20, 2005.

providing for the potential of entirely new indoor and outdoor spaces and functions. A new construction would also take into account the projected population of the MGRHS in order to minimize the square footage of a new building (which would help reduce energy costs). It would consider all of the factors addressed in the major reconstruction, but with an increased spatial flexibility.

The new construction alternative has almost infinite benefits. The architect can adequately address the needs of the school community and results of the proposed space survey, creating a school with room sizes specifically tailored to fit all needs. A thorough space survey will also allow the architect to see which functions can potentially share spaces (such as was completed at the Williamstown Elementary School). In addition to the psychological benefits experienced by students and teachers due to inhabiting a new building, the new construction alternative also offers many potential financial benefits. Through the incorporation of green building techniques such as daylighting, photovoltaic cells, energy efficient HVAC systems, energy efficient materials, etc. (see later in the report for a more comprehensive discussion of potentially useful green building technologies), the school can save significantly on energy costs. Green technologies are beneficial both in their ability to reduce energy costs and in the potential to receive green grants from the MA Technology Collaborative's Green Schools Initiative to pay for them.[25]

Another benefit of the new construction alternative is the opportunity to reconsider potential uses for outdoor spaces immediately surrounding the school. While many students expressed their love for the school's mountain surroundings, students are rarely given access to outdoor facilities. Even the school's courtyards and Japanese garden are currently off-limits to students because of noise disturbances to the surrounding classrooms.[26] The architect of a new school building could learn from this mistake and look for new ways to incorporate structured ways for students to get outside in close proximity to the school building. Constructing a new school, however, is both expensive and wasteful. Any changes to the school building will have to pass at town meetings in both Williamstown and Lanesborough as well as rely on bonds from these towns to pay the difference between their construction bill and the amount allocated to them by the Massachusetts School Building Authority.

[25] See funding section for relevant information.
[26] Information from interview with Robin Lehleitner on April 17, 2005.

X. Criteria for Alternatives Analysis

A. Introduction

Now that we have given background information to the site and outlined its problems and potential solutions, we will identify a number of criteria that will help to evaluate these solutions. We have based the evaluation of our analysis of the four alternatives (no construction, minor renovation, major renovation, total reconstruction) on: health issues (the way each alternative addresses the health concerns of the building), cost of the projects (expenses of each alternative, funding alternatives available), faculty/staff satisfaction (based on results of faculty/staff survey), student satisfaction (based on results of the student survey) [*note: correlations between these two surveys are incorporated into the alternatives analysis], energy efficiency (of each alternative – benefits to environment and cost reduction), environmental impact of construction, and interviews/professional opinions. We have chosen to weigh these criteria differently as our client, the MGRHS Building Committee, has indicated that some issues are of more concern than others. Thus, since health issues are a priority not only of our client but of the community at large, we have chosen to weigh this criteria 3 times as much as the others. Similarly, since cost and faculty/staff opinion were likewise stressed as more important by the Building Committee, we will weigh those criteria 2 times as much as the others. All other criteria (student satisfaction, energy efficiency, environmental impact of construction, and interviews/professional opinions) will be given a weight of 1 in our final calculations.

We have decided to rate these alternatives, using the seven aforementioned criteria, based on their feasibility. Thus, we assessed each of these criteria (4 construction options * 7 evaluation categories = 28 overall criteria) on a feasibility scale from 1 to 5. On this scale, a criterion given the rating of 1 would be least feasible, while a criterion given the rating of 5 would be most feasible. Accordingly, the rating of 3 represents impartial feasibility[27]. We recognize that these ratings are not necessarily indicative of the actual feasibility of these projects; however, they represent, to the best of our knowledge, the viability of the alternatives we have proposed. They do not take into account other alternatives nor necessarily cover every aspect of a building project (i.e. a cost-benefit analysis that we were unable to wholly complete due to lack of information and variety of expense options for each alternative).

[27] "An Analysis of Redevelopment Options for the Former North Adams Sewage Treatment Plant Site". Student Paper; Anna Brittain, Lauren Flinn, Andrew Schulte. Fall 2002. We decided to borrow this paper's evaluation of alternatives method (i.e. a set number of criteria with feasibility ratings from 1-5); we did, however, chose to weigh our criteria (which this paper does not).

1. Criteria for Analysis: Health Issues

Our client has stressed, along with the general community, that health concerns are of the utmost importance in whatever construction project is undertaken. The ventilation and heating systems (contributing to poor air quality that has lead to mold in the classrooms, occurrences of sarcoidosis in two teachers, numerous sinus infections, etc) and the water quality (infected with perchlorate) are the two primary health concerns of the building. Not surprisingly, faculty/staff and students are becoming increasingly intolerant in knowing that this educational environment has a negative impact on their health. Since we know in advance that health concerns are paramount to any construction alternative we suggest, we have decided to weigh this criterion 3 times as much as the six other factors.

2. Criteria for Analysis: Cost

The cost of construction is one of the most important underlying features of any alternative, and it is one of the primary needs addressed by our client (via various sources of funding). The cost of building is the most limiting variable; if cost were not an issue, these problems could be resolved without discussion. Cost varies based on what the state (under the MA School Building Authority) will provide vs. what the two towns will be able to contribute. Costs not covered by state grants will have to be incurred through bonds approved by the citizens of Williamstown and Lanesborough. Thus, it is advantageous to appeal to community members when devising a building plan, for they will be more likely to support the costs of construction if they are included in the process. Alternative solutions to cost issues can be found in rebates/discounts for green building, as we address in the sources of funding. Since the cost of a project is so important to its practicality, we decided to weigh this criterion twice that of the remaining factors.

2a. Criteria for Analysis: Sources of Funding

The building must not only be structurally sound; if it is to receive state funding, which it will need, it must meet the educational requirements of Massachusetts. All of the laws and regulations can indeed be confusing for such a complex and integrated process. This is why the Office of the Inspector General put out a handbook entitled “Designing and Constructing Public Facilities” in 2003. This is intended to provide groups looking to build with the legal requirements as well as recommendations and sources of aid. Among other details, it advises in the early stages of the planning process, the design and construction potentials and laws. More than anything, this serves as a resource for the planner who might be unfamiliar with the

building process. It could indeed be of use to the MGRHS Building Committee in deciding which architect to hire, which construction proposal most accurately meets its needs, etc.

In the past, funding came under the Code of Massachusetts Regulations and the Massachusetts General laws. In the following paragraphs we outline these requirements as they are covered by the creation of the MSBA. Under the Massachusetts General Laws, the Building Committee would most likely focus on the feasibility of obtaining a grant for a prioritized approval of school projects and reimbursements for each alternative. Chapter 70B: Section 7 of this law lists projects that might qualify for major reconstruction projects grants:

> **3.** Priority shall be given to school projects needed in the judgment of said authority to replace or renovate a building which is structurally unsound or otherwise in a condition seriously jeopardizing the heath and safety of school children…(5) Priority shall be given to projects needed in the judgment of said authority for the replacement, renovation or modernization of the heating system in any schoolhouse to increase energy conservation and decrease energy related costs in said schoolhouse. [28]

Several of these priorities apply to MGRHS, but, whatever building option is undertaken, the attainability of a commonwealth project grant is likely to be essential to the nature of the construction. As outlined in Chapter 70B School Building Assistance Program, the application for such a grant is a highly involved process that assures that the school meet the necessary requirements for funding. In order to receive funding from the MSBA, schools must approve project managers as well as have approved forms completed by eligible applicants to "enter into contracts for architectural, engineering and other services." Further limitations and compliances can be found in Chapter 70B: Section 9 of the Massachusetts General Law on the site selection process and cost approval and compliance with environmental standards. The grant from the MSBA for approved school projects will fall between 40-80% of the final building cost.[29]

While a grant from the MSBA cannot be applied for until July 1, 2007, construction can begin on the proposed school. However, any requirements later imposed by the MSBA will have to be complied with in order to receive the funding. (According to the Building Committee's timeline, however, it is highly unreasonable to expect that construction would begin before this date.) All decisions from the MSBA will be made as if the construction was not yet undertaken, as noted in Chapter 70B: Section 5. If the project is

[28] Massachusetts School Building Authority "SBA Legislation as of July 28, 2004. http://www.mass.gov/msba/forms/SBALEG.pdf
[29] *Ibid.*

denied in the first year for funding, it may resubmit a new proposal in the following year if the only reason funding was not appropriated the first year was due to the lack of funds available in the total facility grants for that year available from the MSBA.[30]

A list of criteria for a grant to be approved is listed on the MSBA website, http://www.mass.gov/msba. The MSBA seemingly organized the requirements for building as mentioned in 603 CMR 38.10 (the requirements of applying for a grant). Now the MSBA is clearly required to "develop a priority system" of criteria (including "replacement, renovation or modernization of the heating system in any schoolhouse to increase energy conservation," a concern of the students and faculty at MGRHS). The MSBA must also "develop a formal enrollment projection model", conduct a facilities assessment, and "perform a needs survey" among other tasks necessary so that funding can be properly allocated. Lowest support is equal to generally around 55% (DS) – Mount Greylock should certainly receive more.

Any renovation or reconstruction receiving funding would have to abide by Massachusetts General Laws and State Building Code. Relevant portions can be found most readily under Chapter 71 of the Massachusetts General Laws (entitled 'Public Schools'). This broad chapter addresses course requirements, transportation, maintenance, etc. Probably the most important portion of this chapter is Section 16D entitled "Aid from state". This notes that "a regional school district shall be entitled to receive state aid for *construction* of regional schools". It does not make any mention of renovations (like those grants under 603 CMR 38). Thus, these sources of funding must be considered when addressing how economically feasible it is to repair or rebuild the school. Further funding options can be found under Chapter 15 of the Massachusetts General Laws (Department of Education) in a section entitled "Improvement of Public Schools". Here a few funding alternatives are provided, including "Reimbursement of costs to cities and towns" under Section 60 and REACH awards under Section 55 (given to schools which "demonstrate significant improvement in any area of educational achievement" – a potential after the project has been completed).[31]

3b. *Green Funding Opportunities*

[30] *Ibid.*
[31] Commonwealth of Massachusetts. Massachusetts General Laws. Trial Court Law Libraries. Last update: February 11, 2005. http://www.lawlib.state.ma.us/mgl.html.

Beyond regular funding from the state lies the great potential for funding for green energy technologies. The Building Committee asked the team to review this area for its options. A high performance school, though initially more expensive to construct, can save a new school 30 to 40 percent on annual utility costs and 20 to 30 percent for a renovated school.[32] Funding for such projects can be obtained through initiatives such as the Renewable Energy Trust set up by the Massachusetts Technology Collaborative. A list of funded projects can be found at: http://www.masstech.org/project_lista.asp. In this list, for example, are two "Green Buildings and Infrastructure" grants given to Ashland High School in Ashland, Massachusetts, one for a "feasibility study" and one for "design and construction."[33] A list of available grants is located at: www.masstech.org/renewableenergy/solicitations/index.htm. It is entirely likely that MGRHS could attain funding through such a program. Benefits extend beyond the environment, however; high performance schools provide healthier spaces to live and work, while at the same time reaping economic benefit in the long run.[34] The school can apply for state funding for green building through links at DSIRE (Database of State Incentives for Renewable Energy): http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=MA. Here, something such as the "Massachusetts Energy – Renewable Energy Certificate Incentive" could provide funding when photovoltaic technologies are used ($.06 per kWh).

High performance schools are addressed by the Massachusetts School Building Authority as well. This will help to streamline funding for such projects. As the NEEP (Northeast Energy Efficiency Partnership Inc.) newsletter noted in the first quarter of 2005:

> By early 2006, the newly formed Massachusetts School Building Authority (MSBA) should be on track to review the Best Practices Manuals and Certification Criteria (MA-CHPS) for designing a high performance school. The manuals are being written by the Massachusetts Technology Collaborative (MTC) and the Department of Education. In the past two years, MTC has provided grants to fund design assistance and the incremental cost of construction or inclusion of renewable technologies to 18 high performance green schools in a pilot program to be completed in 2005. These schools are currently being evaluated for energy savings, health and safety measures to provide data to the MSBA supporting performance above minimum standards. This data will validate the MA-CHPS Manual as an effective method for designing high performance school buildings.[35]

[32] First Draft, CHPS Best Practices Manual, Massachusetts Version VOLUME I Page 44.
[33] Renewable Energy Trust (A Division of the Massachusetts Technology Collaborative). List of funded projects: http://www.masstech.org/renewableengery/index.htm.
[34] First Draft, CHPS Best Practices Manual, Massachusetts Version VOLUME I Page 44.
[35] Northeast Energy Efficiency Partnerships, Inc. *NEEP* Notes. First Quarter 2005. © 2005. http://www.neep.org/newsletter/IQ2005/HPS.htm.

It is thus likely that the MSBA will fund high performance school design in the future. Since the final plans for the MGRHS project are not set to be completed until June of 2007, it is altogether likely that a more organized mode of funding will be established by the MSBA at that time.

It should be noted that while the state of Massachusetts will fund a large percentage of various projects, it explicitly will not fund: swimming pools, skating rinks, outdoor stadiums or bleachers, any modifications to public roads, sidewalks that are not on school property, etc, district amenities that are unconnected with the schools (superintendent's office, etc).[36]

Another consideration that the Building Committee will need to make in the process of relocating MGRHS will be to account for the Massachusetts Wetlands and Rivers Protection Act. There is currently a pond in the northwest corner of the site. Development of the land near the pond will have to be referenced to the Protection Act, 310 CMR 10.00 under the Department of Environmental Protection and granted approval through the Conservation Commission if construction is intended on this section of the land.[37]

4. Intro to Criteria 3 and 4: School Community Research Results

We wanted to get as much input as possible from the personnel and students of MGRHS since all of these individuals have a great stake in the renovation or reconstruction of the school. To this end, we surveyed the Mt. Greylock students and teachers, as well as other staff members, on the school's physical qualities. We sought their perspectives on the uses and condition of all the spaces in the current school building and on the grounds, as well as on what improvements ought to be made to the school, in order to set priorities for a renovation or reconstruction. The faculty/staff and student surveys had the same first page and differing second pages. The first page consisted of a list of indoor and outdoor spaces. It asked the interviewees to rank both the importance (not important (1) → very important (4)) and the current condition (not good (1) → very good (4)). Using a scale of 1-4 instead of 1-5 forced the individual to select one side or the other, denying her a middle ground (and providing us with more telling information). Space for comments was provided:

[36] Massachusetts Department of Education Funding Regulations. http://www.doe.mass.edu.
[37] 310 CMR Department of Environmental Protection. Updated Dec. 20, 2002. http://www.mass.gov/dep/brp/ww/files/310cmr10.pdf.

SEX: M F

SUBJECT TAUGHT _____

The MGRHS Faculty/Staff Survey

We are a group of Williams College students doing a planning project to serve the MGRHS building committee on potential ways to improve the building. Thanks so much for taking the time to complete this survey. Assessing how you value various aspects of the building will help us prioritize options when considering the reconstruction or renovation of the school.

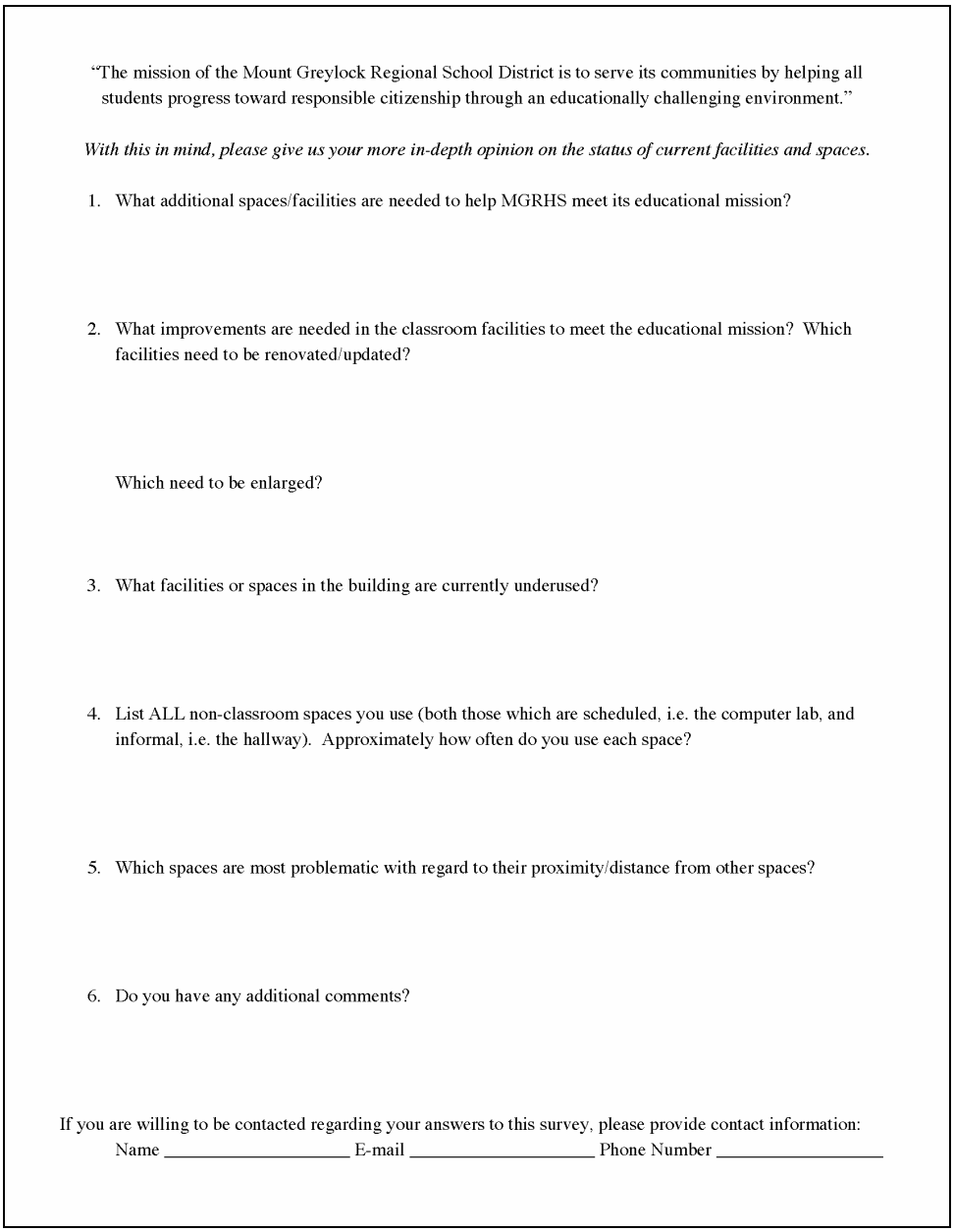
Please rate each of the following spaces based on their importance to you and their current conditions. Consider both the FUNCTIONS of the spaces and their PHYSICAL QUALITIES (size, condition, usefulness, attractiveness, etc).

IMPORTANCE not important ‡ very important	OUTDOOR SPACES	CURRENT CONDITION not good ‡ very good	COMMENTS
① ② ③ ④	courtyards/ Japanese garden	① ② ③ ④	
① ② ③ ④	athletic fields	① ② ③ ④	
① ② ③ ④	cross country trail	① ② ③ ④	
① ② ③ ④	outdoor lunch area	① ② ③ ④	
① ② ③ ④	parking lot	① ② ③ ④	
① ② ③ ④	other _____	① ② ③ ④	
① ② ③ ④	other _____	① ② ③ ④	

IMPORTANCE not important ‡ very important	INDOOR SPACES	CURRENT CONDITION not good ‡ very good	COMMENTS
① ② ③ ④	cafeteria	① ② ③ ④	
① ② ③ ④	auditorium	① ② ③ ④	
① ② ③ ④	library	① ② ③ ④	
① ② ③ ④	gymnasium	① ② ③ ④	
① ② ③ ④	locker rooms	① ② ③ ④	
① ② ③ ④	bathrooms	① ② ③ ④	
① ② ③ ④	guidance/administrative offices	① ② ③ ④	
① ② ③ ④	hallways	① ② ③ ④	
① ② ③ ④	computer lab	① ② ③ ④	
① ② ③ ④	science lab facilities	① ② ③ ④	
① ② ③ ④	classrooms	① ② ③ ④	
① ② ③ ④	resource room	① ② ③ ④	
① ② ③ ④	art rooms	① ② ③ ④	
① ② ③ ④	music rooms	① ② ③ ④	
① ② ③ ④	other _____	① ② ③ ④	
① ② ③ ④	other _____	① ② ③ ④	

Figure 15

On the second page of the faculty survey we posed a series of seven questions asking faculty members to assess the spaces and facilities of Mount Greylock:



"The mission of the Mount Greylock Regional School District is to serve its communities by helping all students progress toward responsible citizenship through an educationally challenging environment."

With this in mind, please give us your more in-depth opinion on the status of current facilities and spaces.

1. What additional spaces/facilities are needed to help MGRHS meet its educational mission?

2. What improvements are needed in the classroom facilities to meet the educational mission? Which facilities need to be renovated/updated?

   Which need to be enlarged?

3. What facilities or spaces in the building are currently underused?

4. List ALL non-classroom spaces you use (both those which are scheduled, i.e. the computer lab, and informal, i.e. the hallway). Approximately how often do you use each space?

5. Which spaces are most problematic with regard to their proximity/distance from other spaces?

6. Do you have any additional comments?

If you are willing to be contacted regarding your answers to this survey, please provide contact information:
Name _____ E-mail _____ Phone Number _____

Figure 16

On the second page of the student survey we asked the students to name ideal spaces and facilities they would include in a new building. We also requested that they rate a number of environmental concerns (5 total) on a scale (not important → very important) respectively from 1 to 5, leaving a 6th option for 'no opinion'. At the end of the student survey we inquired about what spaces they felt were the worst and best of Mount Greylock, and why:

Directions for Part Two: Think about facilities you think would make MGRHS a better place. Number your top three choices, 1 being the highest.

___ wood shop
___ photography/ dark room
___ observatory
___ swimming pool
___ tennis courts
___ ice rink
___ kitchen/ home ec class facility
___ dance studio
___ student lounge
___ garden
___ ropes course
___ automotive repair
___ track
___ metal shop
___ improved theater facilities
___ additional computer facilities
___ other _____
___ other _____
___ other _____
___ other _____

Directions for Part Three: Now let's talk about environmental concerns. Rate the following items on a scale of 1-5 based on how important they are to you.

	not important ‡			important		no opinion
more windows in school rooms	①	②	③	④	⑤	⑥
recycling	①	②	③	④	⑤	⑥
solar energy	①	②	③	④	⑤	⑥
drinkable water	①	②	③	④	⑤	⑥
bicycle/pedestrian access	①	②	③	④	⑤	⑥
other _____	①	②	③	④	⑤	⑥

Part Four (don't worry, we're almost done!)

What do you think is the best space of MGHRS? Why (try to focus on the PHYSICAL or SPATIAL aspects)?

What do you think is the worst space in MGRHS? Why?

If this survey inspires you or you want to talk/share more of your ideas about this subject please contact us!
06agb@williams.edu

Figure 17

We feel, and our client has indicated, that the responses of these surveys are integral in determining which alternative is most appropriate for these communities. Our client has indicated that the responses of the faculty/staff are more important than those of the student body in determining which alternative is most fitting, so we have decided to weigh these responses twice as much as the student, and remaining, criterion.

3a. Criteria for Analysis: Faculty Survey Results (Teacher Satisfaction)

Faculty Survey Results, Indoor/Outdoor Spaces:

We distributed surveys to the faculty and staff at MGRHS asking them to rank the importance and current condition regarding of indoor and outdoor spaces.

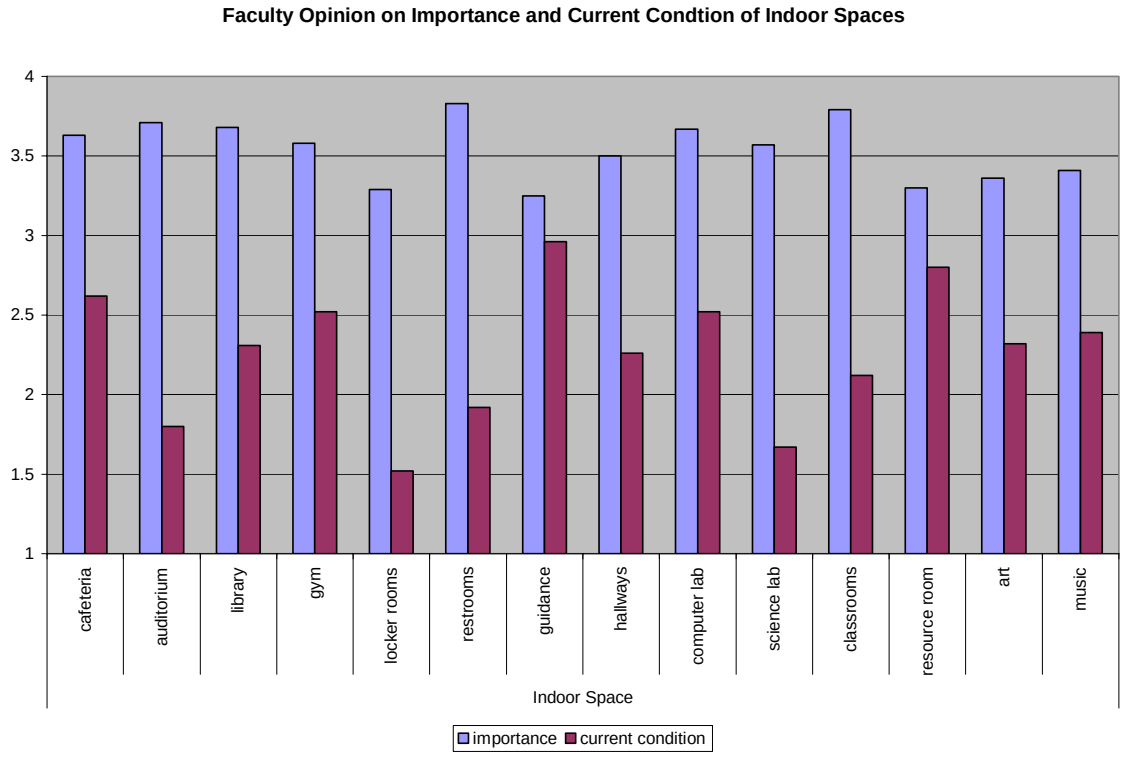


Figure 18 (N = 25)

In general, the faculty rated the indoor spaces much more important than outdoor spaces. Also, indoor spaces were found to be in poorer condition than outdoor spaces. Using this general sentiment expressed by the faculty, we recommend that the Building Committee focus on these particular areas (indoor spaces with high degrees of importance – bathrooms, classrooms, etc. – and spaces in poor condition – locker rooms, science labs, bathrooms) if a renovation is decided on instead of a reconstruction. In evaluating the indoor spaces at MGRHS, the faculty highlighted many areas that are highly valued in the school but are in very poor condition. In general, the faculty rated almost all of the indoor spaces as very important, while the students discriminated between different space importances. The faculty rated the restrooms, classrooms, auditorium and science labs as being the most important. The auditorium, the locker rooms, restrooms, and

the science labs are all rated as the poorest condition. The auditorium, restrooms, and science labs were all cited as being in poor condition and would be important focuses for a renovation.

In the outdoor spaces, the faculty and staff of MGRHS highlight the fact that while the parking lot is important (ranked 2nd), its current condition is very poor. Further, athletic fields are rated by the faculty as most important, but only in decent condition.

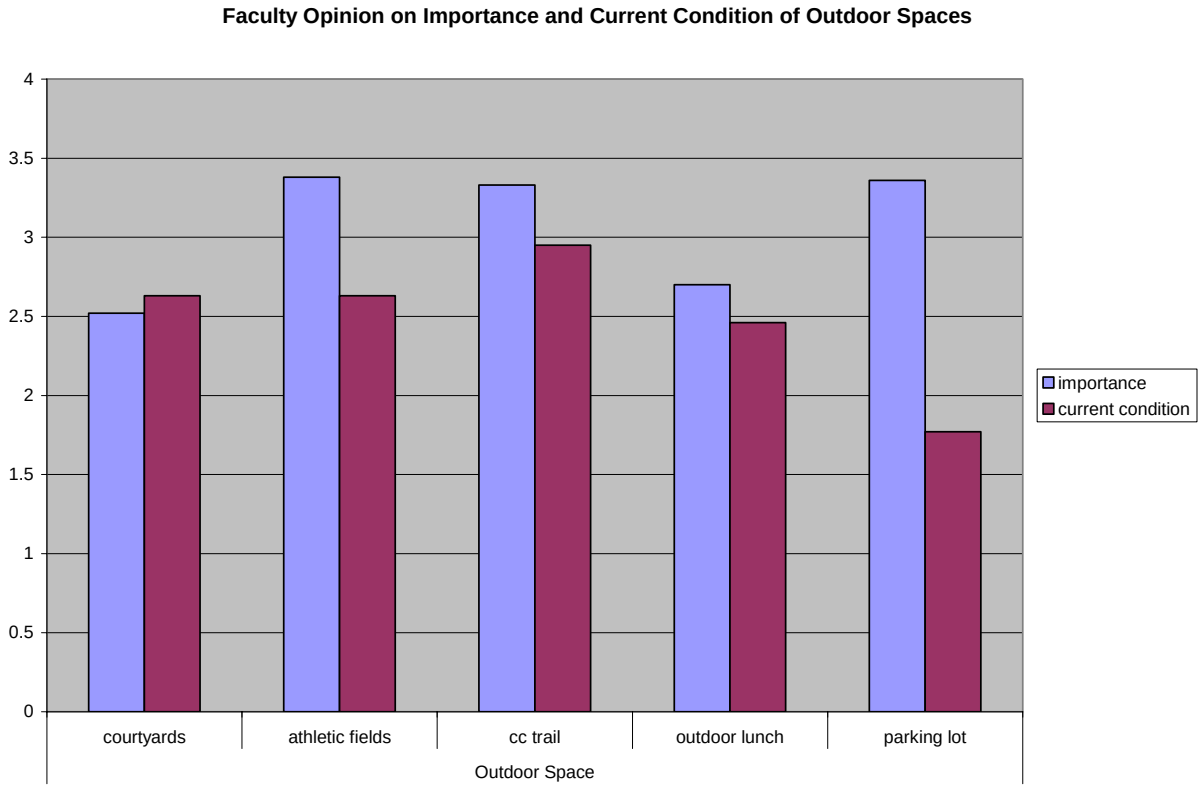


Figure 19 (N = 27)

Faculty Survey Results (Open Ended Questions):

The faculty comments ranged in number from 12 to 24 for each of the 7 questions proposed. Thus, anywhere from 20 to 40 percent of the faculty responded to a given question (a solid survey-response rate). While responses varied greatly in content and tone, there were some issues raised with more frequency than others. The open ended questions we asked of the faculty were:

1. What additional spaces/facilities are needed to help MGRHS meet its educational mission?
2. What improvements are needed in the classroom facilities to meet the educational mission? Which facilities need to be renovated/updated?
3. Which facilities need to be enlarged?

4. What facilities or spaces in the building are currently underused?
5. List ALL non-classroom spaces you use (both those which are scheduled, i.e. the computer lab, and informal, i.e. the hallway). Approximately how often do you use each space?
6. Which spaces are most problematic with regard to their proximity/distance from other spaces?
7. Do you have any additional comments?

When asked about additional facilities, the facility expressed a most pressing need for smaller rooms. Seven faculty members noted that smaller rooms would be helpful for test taking, meetings, conferences, group work, etc. Faculty/staff also noted the need for additional technological facilities – more and better computer facilities for students and teachers (we did not distinguish between the number of technological facilities vs. the increase in their quality – however, comments lead us to believe that these are both concerns). Three individuals noted that the science facilities, specifically lab spaces, are currently lacking.

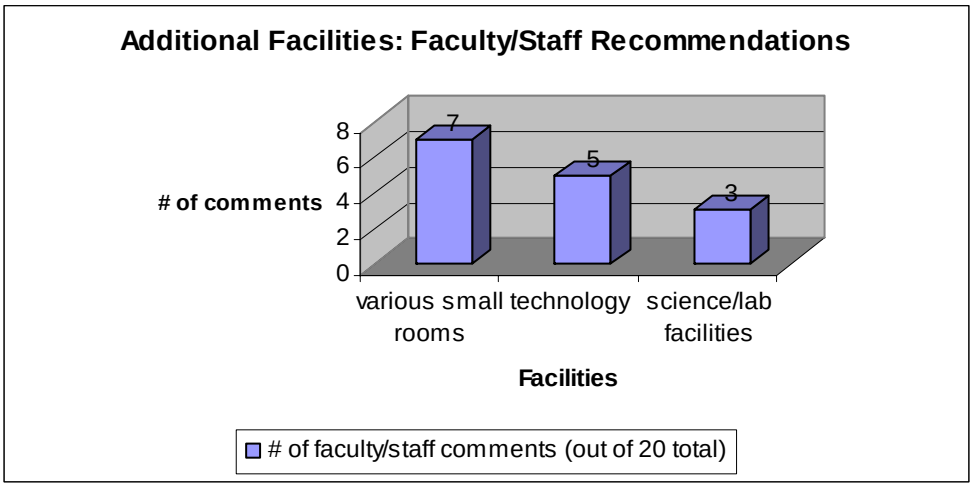


Figure 20

Other individuals mentioned the need for a common gathering area for students (and teachers) as well as a track among other athletic and extracurricular facilities. Two teachers felt that no additional facilities were necessary, while in contrast another noted that "these facilities are not up to par and are certainly outdated", demanding "a new building, without penny pinching." This information is useful to our team's recommendation to the Building Committee as to what facilities should be prioritized in the construction of a new school (or major renovation).

The faculty and staff members were most responsive in the second question relating to improvements needed at the school. Twenty four individuals answered this question, or 40% of the total faculty and staff population at MGRHS.

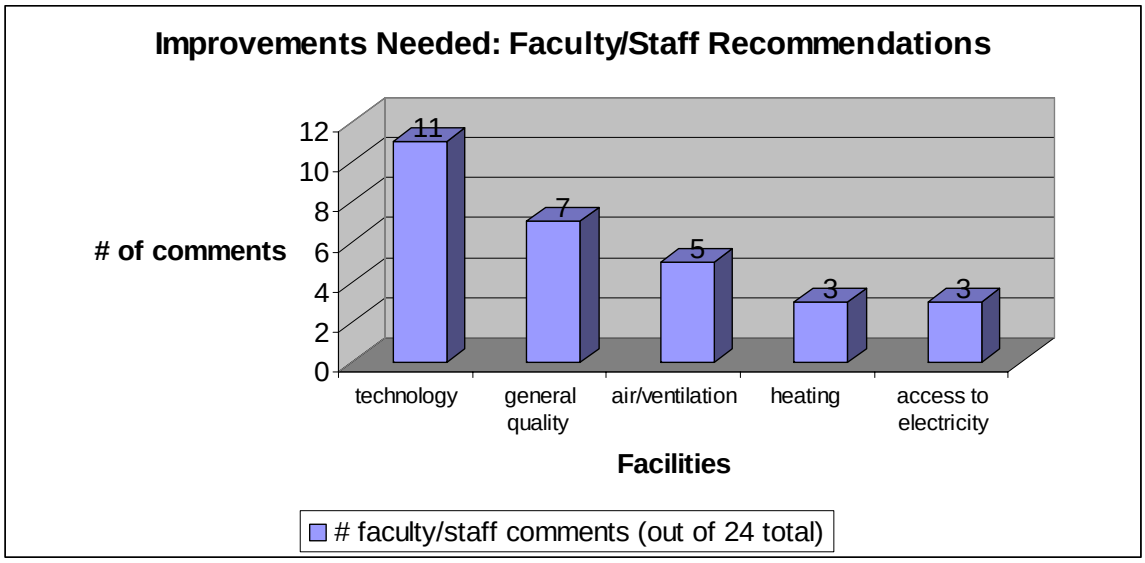


Figure 21

As noted in Figure 21, the area seen by the faculty and staff as in need of the most attention is that of technology. A total of 11 out of 24 individuals, or 46% of the respondents, noted that the school is in great need of technological improvement. These ranged from the number of, quality of, and location of computers. A female Latin teacher requested "new computers in classrooms" and "more computer lab[s] for classroom use." A female English teacher noted: "my computer never works yet I'm required to read my emails every day." The general quality of the school was repeatedly remarked upon; these comments addressed the cleanliness of the school, the status of the equipment ("desks are disgusting, old and wobbly"), and the need for "cosmetic changes, overall uplift." The air/ventilation was also a major issue for five of the respondents. A librarian remarked, "the air is bad – my eyes are red and dry and my nose runs." The lack of heating in winter and the lack of air conditioning during the spring were both highlighted as issues by the faculty. Access to electrical outlets was also mentioned by a number of individuals. Lack of storage space, inadequate lighting, and the poor state of science facilities were also noted by a few individuals, as well as two who felt that no improvements are needed. This information is helpful to us in prioritizing recommendations for renovation/reconstruction to the Building Committee. The faculty and staff are most dissatisfied with the current available technology and the general quality of the building, so these should be priorities in whatever construction project is undertaken.

Only 12 faculty/staff members commented on facilities that needed to be enlarged. Although the school is built for 1380 students, 5 of the 12 respondents felt that the classrooms are too small (see Figure 8): as one

female English teacher notes: “If we’re to have 25+ students in a class, we need larger space. Look at ADMIN office, guidance and SPED – huge spaces for fewer people”.

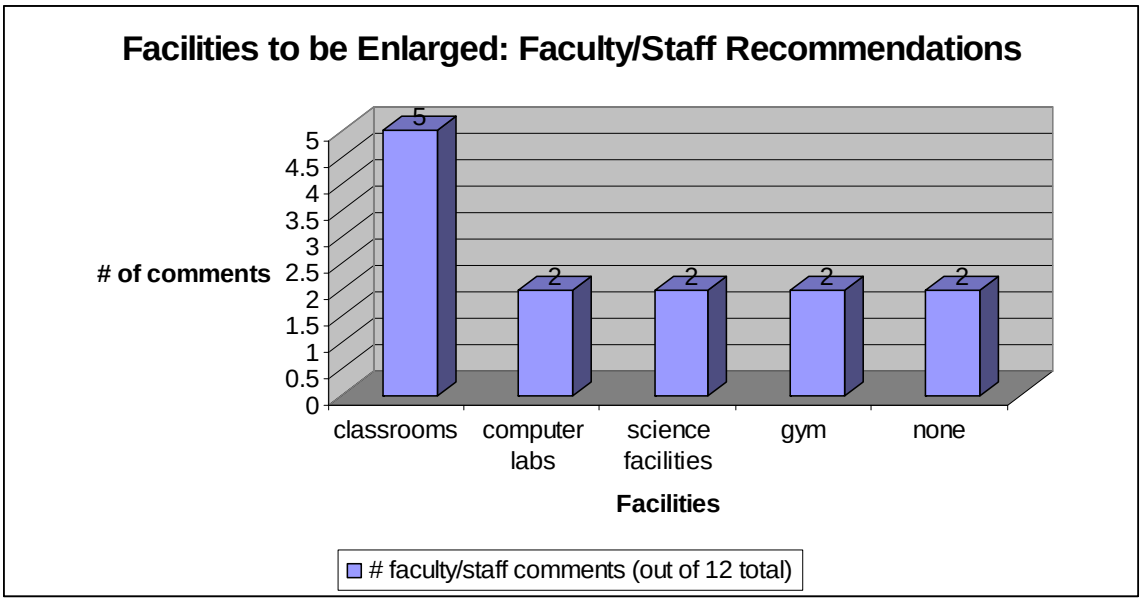


Figure 22

The other facilities mentioned (computer labs, science facilities, and gym) only had 2 comments apiece. Two individuals felt that no facilities needed to be enlarged. Thus, from this information it is clear that classroom enlargement is the first priority of the faculty/staff. We will use this information when considering what to include in renovations and/or what to include in the design of a new school.

We asked the faculty and staff what spaces in the building are currently underused because we felt that it would help us in the design of a new facility (and in prioritizing what to renovate should that alternative be selected). If we can determine what spaces are underused, we will better be able to recommend to the Building Committee what to renovate, and, if reconstruction should occur, what to include (and what NOT to include) in the new building. The responses to this question prompt us to wonder at why these facilities are underutilized and how one could increase the frequency, and ways, in which they are used. Unfortunately, the question addressing underused facilities received a fairly poor respondent rate (only 14 individuals – 23% of the whole faculty/staff). Here, respondents felt that the greenhouse was the most underused space, while the library and auditorium were also given mention. Individuals also mentioned that

the so-called “cold corridor” and the career center are underused. Here this information is presented in Figure 9:

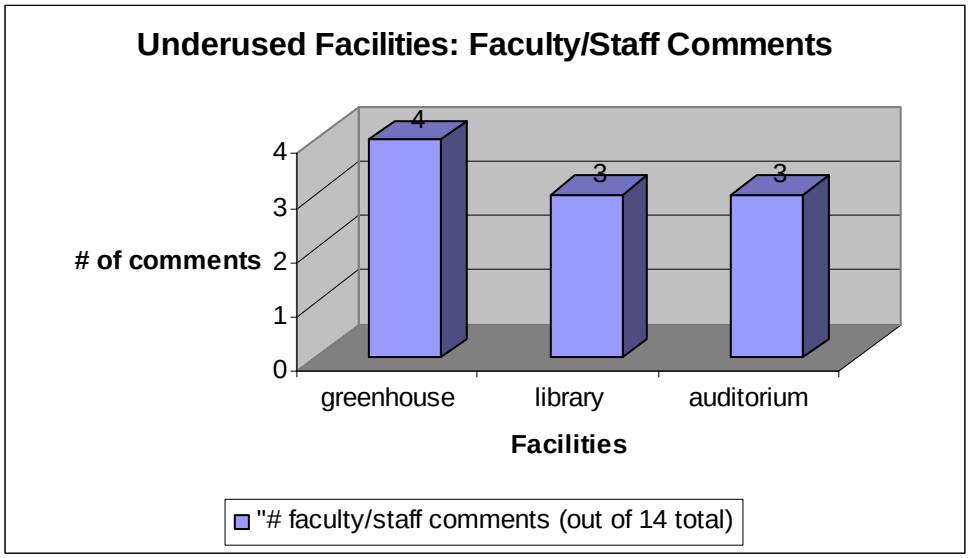


Figure 23

In assessing what spaces are used by faculty and staff outside the classroom, we can determine what spaces it is important to keep (in a new building/renovation project), which need attention because they are used so frequently, and which are not so necessary as we might have originally thought (i.e. greenhouse). Here we found that, overwhelmingly, the library, computer labs, and hallway are the most frequently used out-of-classroom spaces. Thus, it is reasonable to think these should be prioritized (and perhaps expanded upon) in the construction project. The teachers’ rooms (faculty resource room, teachers’ room at the end of the south corridor, dining room, etc.) were noted by 4 individuals along with the greenhouse, auditorium, and music rooms. Restrooms were also frequently mentioned. Figure 24 displays these results:

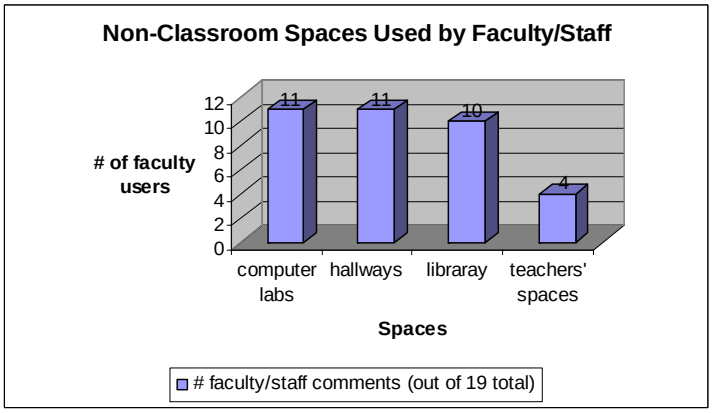


Figure 24

The layout of the school seems to be a common problem for students and faculty alike; thus, we thought it would be appropriate and useful to ask the faculty/staff what spaces they felt were problematic with proximity to other areas of the school. These results are presented in Figure 25:

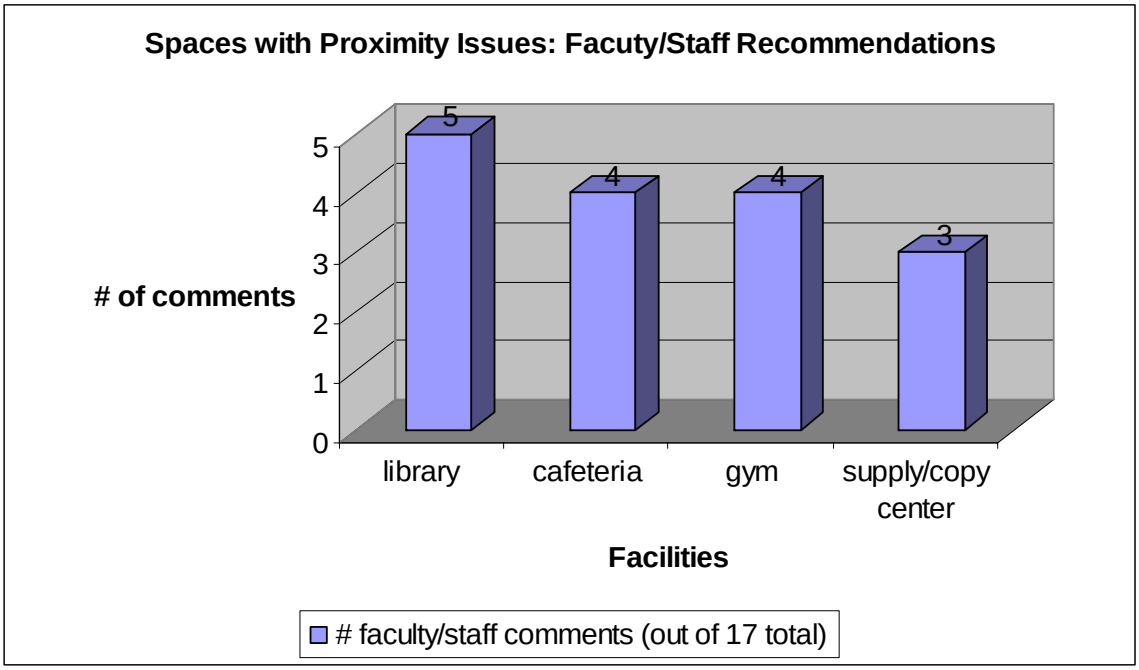


Figure 25

Here, the library seems to be the most poorly located space (specifically with relation to the Middle School), while the cafeteria, gym, and supply/copy center were also noted as being inconveniently situated. A few individuals also remarked that the nurse's office and computer labs (such as the one in the library) are not very accessible. Two teachers felt that there were no proximity issues: one of these, a male science teacher, noted that "we have a small school," while others seemed distressed at the layout. One English teacher commented on her isolation from her peers: "all English department faculty are spread around the entire school with no central office (which is a contractual promise)." While the layout of the school may not be able to be fixed in a renovation, these issues can be addressed in a total reconstruction (we see this as motivation for performing a reconstruction over a renovation).

The section for additional comments was fairly repetitive; the comments were often reiterations of the more pressing points addressed earlier in the survey:

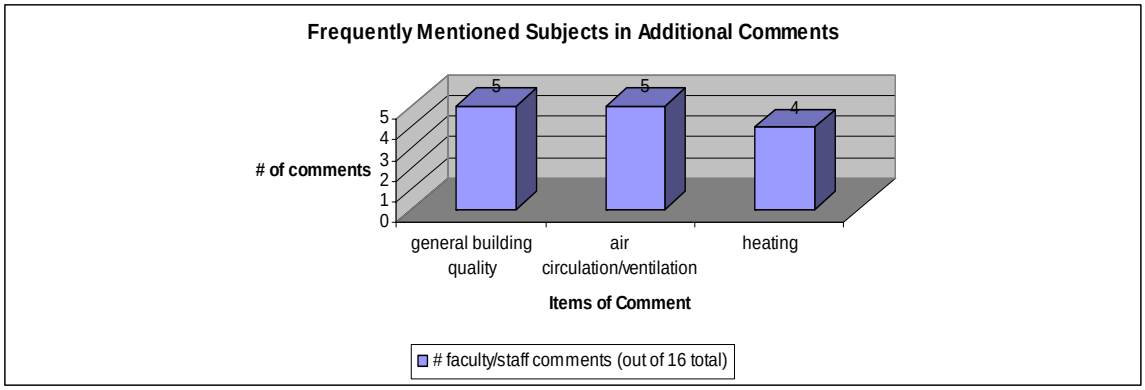


Figure 26

Staff/faculty commented most frequently on the general quality of the building ("ALL parts of this school are in desperate need of systematic and thorough renovation!") and the problems with air quality and ventilation ("quality of air, heating, lighting and water are a big issue to the quality of life that occurs while we are in the process of educating and learning.") Four respondents also commented on the heating system while a few others noted the poor state of the roof. Major themes for this section centered on the health hazards of the building ("I can't imagine what is living under what is left of the carpet but we get many complaints about sinus infections" and "It's not merely a matter of space it's a health and safety issue") as well as the problems with layout ("My department is so spread out, I feel very isolated in my island kingdom. I miss my colleagues.") In contrast, two of the teachers felt that the building does not need much work, one noting that "we can do our jobs". The other commented that "what goes on INSIDE the building is what is more important than what materials the classrooms are made of. When money is tight make sure education excels."

We look forward to incorporating the faculty/staff comments and recommendations in our assessment of the alternatives for construction. These open-ended responses have provided us with a wealth of information as to how the staff and faculty members feel about the spaces of MGRHS. It is now up to us to translate those needs into concrete proposals for the betterment of the educational facility.

4. Criteria for Analysis: Student Survey Results (Student Satisfaction)

Student Survey Results, Indoor/Outdoor Spaces:

The student survey comprised several sections. The first page of the student survey was the same as the first page of the faculty/staff survey (asking students to rate each major outside and inside area of the school in importance and current condition), in order to see which areas of the school are most in need of improvement as well as what features perhaps should be preserved or echoed in the renovated or reconstructed school. For inside spaces, it was clear that the restrooms and locker rooms are seen as the inside areas in the worst condition, and that it is highly important to the students to improve these. The cafeteria, classrooms, hallways, and gymnasium were also considered highly important by the students. The gymnasium gained the highest marks of all the indoor spaces, while the condition of the cafeteria, classrooms, and hallways was variously rated. The library and auditorium were also rated as fairly important; the library was seen as in fair condition but the auditorium in disrepair. Based on comments from the surveys, the best-liked spaces appear to be the most well-lit and spacious, such as the gym and the library. Thus, we believe that these design features should be incorporated into the more intense building options. Further, the facilities that are ranked of high importance but in poor condition (the restrooms and locker rooms in particular) should be priorities for renovation, if renovation is selected:

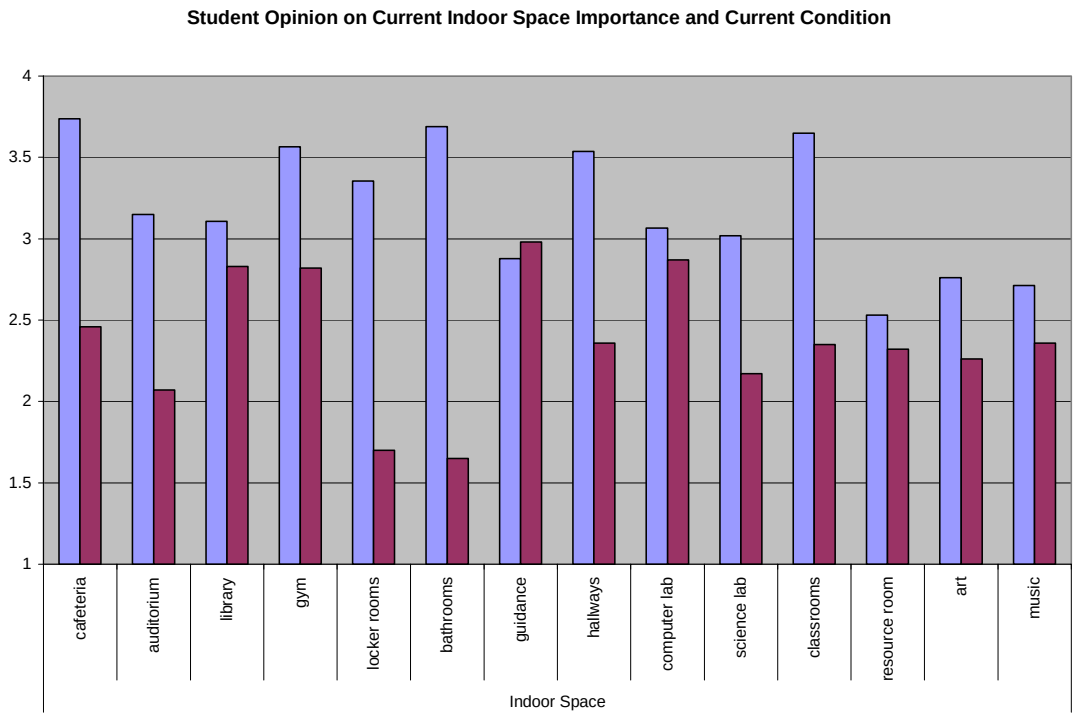


Figure 27 (N = 293)

As for outdoor spaces, the students found the parking lot in the greatest need of attention, as it was second highest in importance but worst in condition. The athletic fields were rated the most important, while student perception of their condition varied but remained generally neutral. The outdoor lunch area was next in area of importance and considered to be in fairly poor condition. The cross-country trails in the woods next to the school fields were rated fairly important as well and were seen as in fairly good condition. Overall, it is clear that an improved parking lot should be a priority under renovation or reconstruction of MGRHS, and the athletic fields should not be given short shrift by the siting of a new school building (ex.).

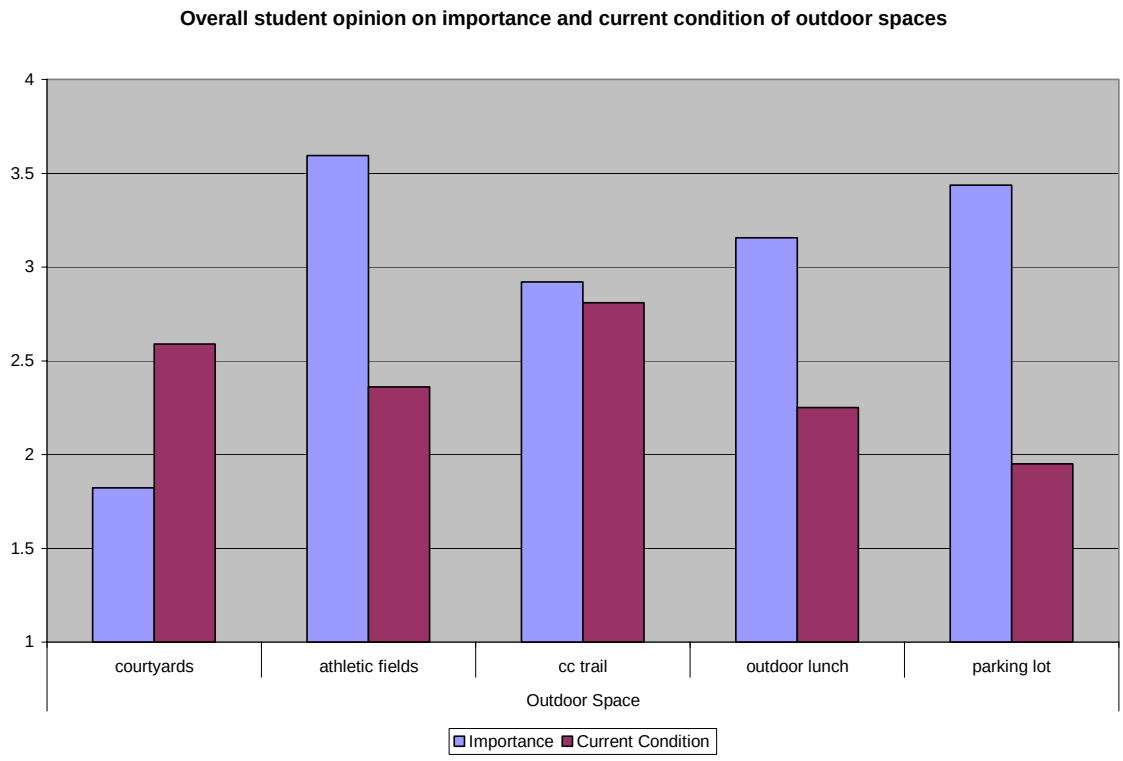


Figure 28 (N = 292)

On the second page of the survey, we asked the students what additional facilities they thought would improve the school, listing a wide range of possibilities for them to choose their top three choices from. We asked this in order to determine which changes could, according to student sentiment, be made in the school's program (with possible incorporation in the major renovation/reconstruction options). The clear favorite was a student lounge, with 18% of students of both sexes (this percentage represents the number of students who ranked this option as one of their top three choices) listing it as a desired addition (61 out of 294 students who answered this question). The other facilities that had a fair amount of overall support, though unbalanced between the sexes, were a photography lab, a swimming pool, and a proper track, with

between 9% and 11% of the votes. Other facilities, such as an ice rink, a tennis court, a dance studio, a kitchen or home economics facility, a tennis court, improved theatre facilities, a metal shop, and an automotive repair instruction shop, also had some support. From this, it makes sense to recommend that desired, financially realistic, and useful facilities such as the student lounge, photo lab, and track be included in the renovated or rebuilt school.

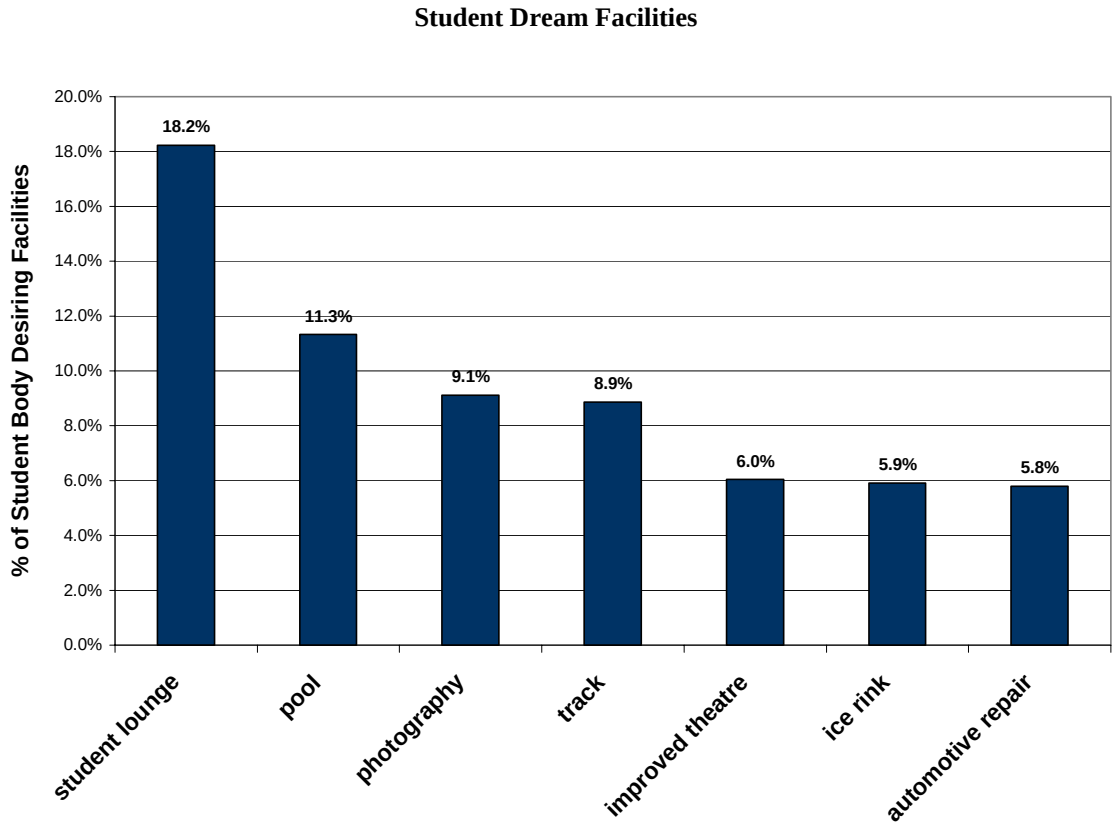


Figure 29 (N = 264)

The second portion of page 2 of the student survey asked students for to rate environmental concerns related to the school. These included: more windows in rooms; recycling; solar energy; drinkable water; and bicycle/pedestrian access. Across all grades, drinkable water was by far the most important issue, not surprising since the lack of drinkable water is an everyday source of frustration for students and staff. More windows, recycling, and solar energy were all considered of mildly important, while bicycle/pedestrian access was rated least important (most likely because the school is so far from population centers that systematic non-automobile access seems unrealistic). A solution to the drinking water problem must clearly be a priority for the school; luckily it appears that there may be a clean well on the school property after all,

although more testing needs to be performed. It should be noted that the other environmental concerns that were perceived as somewhat important (better natural light and more fresh air from windows in particular) are dependent on the physical construction of the school (and might not be able to be addressed in a simple renovation).

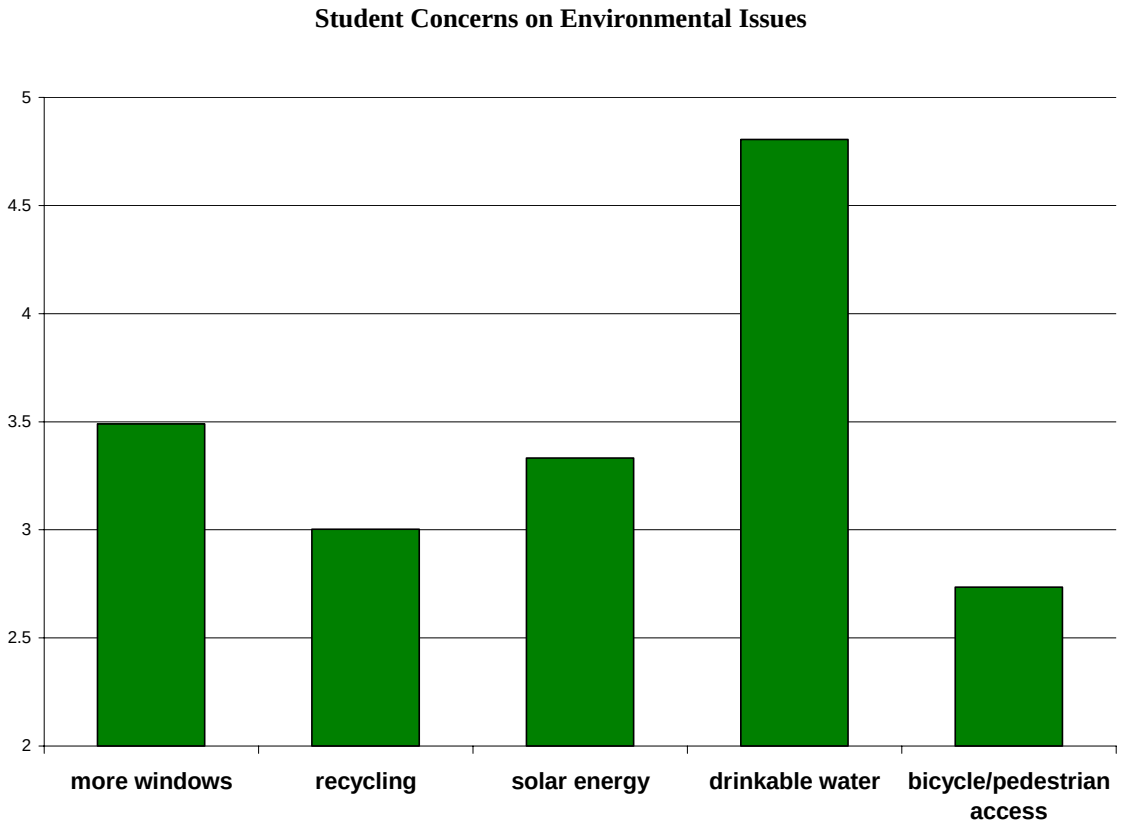


Figure 30 (N = 289)

Student responses to open ended questions (Best Space/Worst Space):

For the third part of our student surveys we asked students a few open ended questions. We decided to limit the number of these in order to accommodate what we anticipated to be the typical extent of engagement and time spent on the survey for an average high school student. We asked students what they thought the best and worst spaces at MGRHS were, and why. Approximately 215 students replied to these open-ended questions which allowed us to determine not only which spaces the students liked or disliked, but perhaps more importantly why these choices were made.

Student Worst Space Assessment

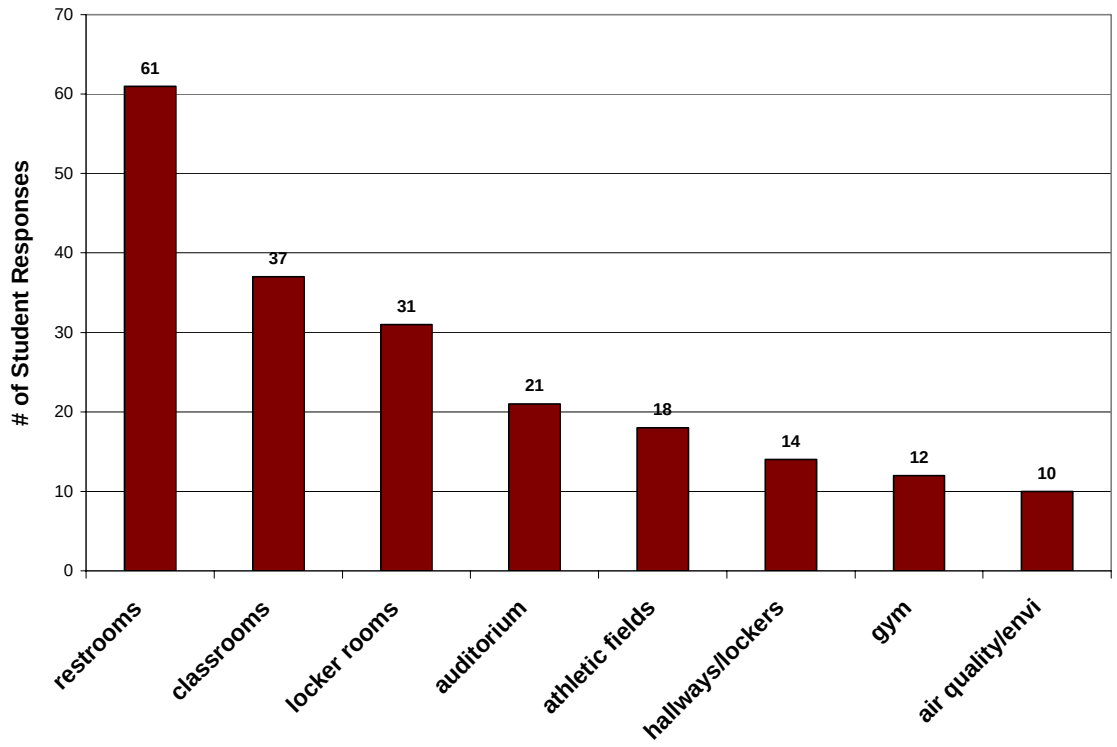


Figure 31 (N = 246)

Good Spaces:

The Gymnasium (63 respondents)

While the gymnasium was the overwhelming favorite space of the students surveyed, the reasons for this rating seems related more to the function of the space than its actual spatial characteristics (students stressed that it was a space in which they were given freedom to move around). Many students, however, commented positively about its size, lighting, airiness, and ability to be subdivided into multiple activity spaces if necessary.

Outside (48 respondents)

Outside spaces in general (broken down more specifically into sports fields, courtyards, the outside lunch area, and a general appreciation of the surrounding views and environment) were also very popular among student respondents, although many of them noted that they were not allowed to use these resources as frequently as they would like. These spaces were noted for both their aesthetic value and the freedom students experienced while outside.

Other notable mentions:

Many students remarked that they liked spaces which were airy, had many windows, were large, and had the potential to be flexibly subdivided. The library was mentioned as an example of this sort of space as were several individual classrooms (it is notable, however, that classrooms as a whole were not mentioned positively by any of the students). These seem to coincide with the faculty concerns about the general quality (lighting, air circulation, etc) and health problems of the building.

Bad Spaces:

Restrooms (61)

An overwhelmingly large number of the students mentioned that the restrooms were a serious problem at MGRHS, noting that they were dirty, smelly, etc.

Classrooms (37)

The second worst space designated by students at MGRHS was classroom space (comments generally noted that the windowless classrooms were especially bad, and that many classrooms had mold, poor air circulation, heating problems, etc). These concerns mirror those of the teachers, 12 of whom noted either general quality or air/ventilation as a top concern of theirs.

Locker rooms (31)

31 students designated locker rooms the "worst space" noting that lockers were in disrepair (the girls' locker rooms were notably considered worse than the boys' locker rooms). Comments included both that the locker rooms were not well maintained and that they were quite literally falling apart.

Other notables:

The students also noted the inadequacy of the auditorium (their 21 comments ranged from "dusty" to "chairs are falling apart and duct taped together") as well as often complaining about the general quality of the building (inadequate lighting, heating, ventilation, etc). Students seemed less concerned about technology than the faculty; computer labs, the space in need of the most improvement according to 11 of the faculty members surveyed, were only mentioned 3 times by students.

Comparing Faculty/Staff and Student Responses: Indoor Spaces

*note: Faculty/Staff finds almost everything important – the lowest ranked on importance is 'guidance' with a 3.25 – 9 of the 15 total categories were ranked 3.5 or above.

Faculty/Staff Priorities (above 3.5) - Importance:

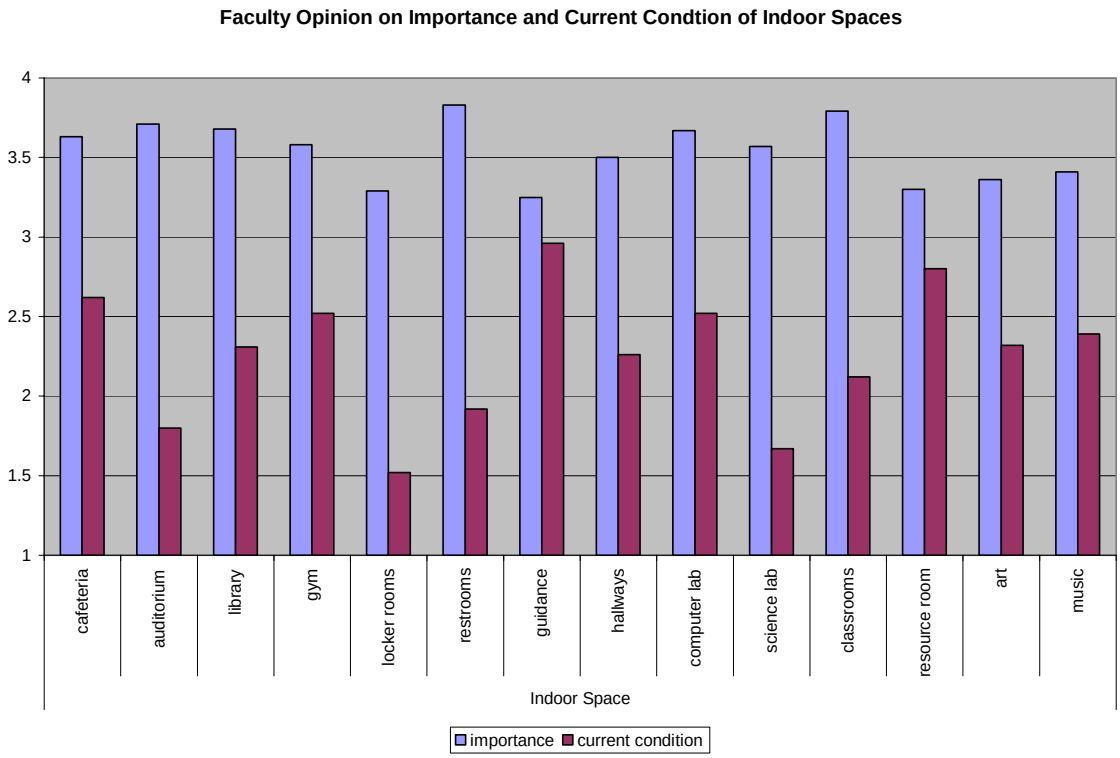


Figure 32

1. *<u>restrooms</u> – 3.83 (current condition: 1.92)*
   -low condition rating for such a high level of importance
2. *<u>classrooms</u> – 3.79 (current condition: 2.12)*
   -current condition rating seems fairly low for how high of a priority classrooms are (this is true for students and teachers):
3. *<u>auditorium</u> – 3.71 (current condition: 1.8)*
   -very low condition rating for how important this space is to faculty
4. *<u>library</u> – 3.68 (current condition: 2.31)*
   -fairly mild condition rating for a high importance
5. *<u>computer lab</u> – 3.67 (current condition: 2.52)*
   -mild condition rating for a high importance
6. *<u>cafeteria</u> – 3.63 (current condition: 2.62)*
   -mild ratings – while not completely satisfied, this does not seem to be an issue of the utmost importance for faculty/staff
7. *<u>gymnasium</u> – 3.58 (current condition: 2.52)*
   -important, but, like the cafeteria, not immediately so
8. *<u>science lab</u> – 3.57 (current condition: 1.67)*
   -very poor condition rating for a facility of high importance – the faculty/staff seems to think this should be addressed

Student Priorities (above 3.5) – Importance:

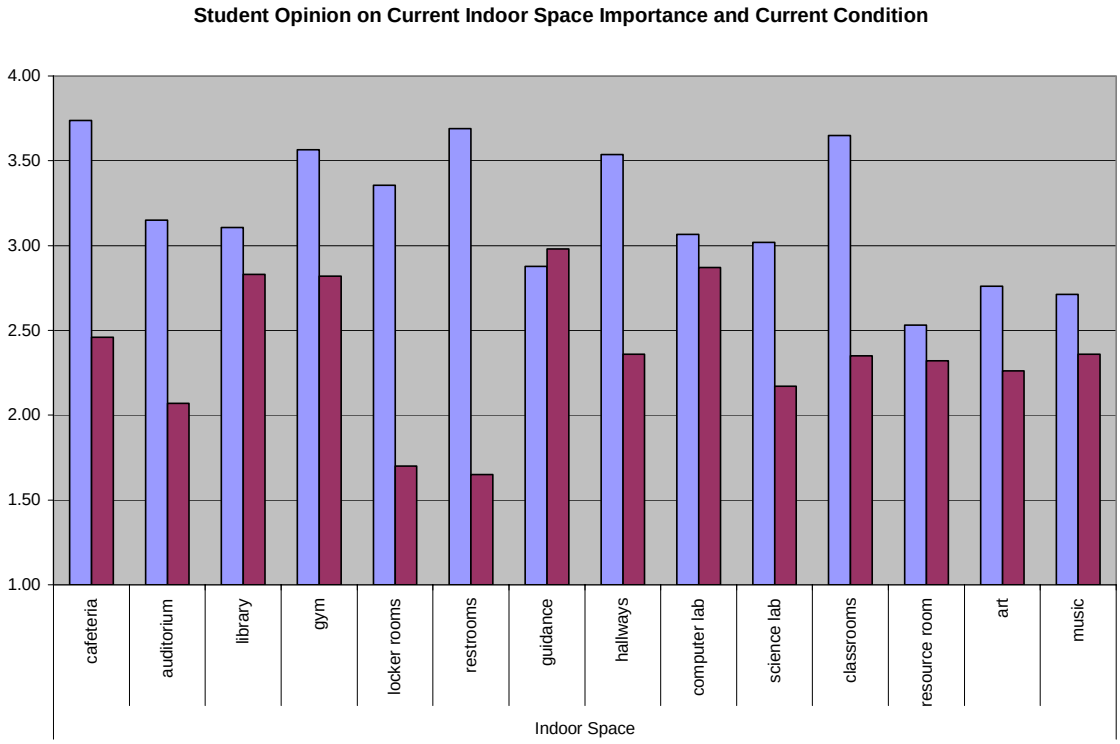


Figure 33

1. *<u>cafeteria</u> – 3.74 (current condition: 2.46)*
   -this was rated with the highest level of importance, but the student body does not seem alarmingly dissatisfied with the current condition
2. *<u>restrooms</u> – 3.69 (current condition: 1.65)*
   -very low condition rating for the level of importance this is given
3. *<u>classrooms</u> – 3.65 (current condition: 2.35)*
   -fairly mild condition rating for high level of importance
4. *<u>gymnasium</u> – 3.57 (current condition: 2.82)*
   -mild condition rating for fairly high level of importance
5. *<u>hallways</u> – 3.54 (current condition: 2.36)*
   -similar to classroom ratings, students feel that the hallways are important but their condition not in immediate need of attention. Comments include: "trashed" ("very messy'), "dirty and has bad roofs", "way too crowded", "poor locker location"/"lockers are broken" – while students have excellent suggestions for ways to improve the hallways, we feel that these should only be addressed in a major renovation or a larger reconstruction (where the hallways should then be re-routed), but are not such an immediate concern that they should be included in a small renovation.

Current Condition Priorities (poor quality):

Faculty/Staff: Facilities found to be of the lowest quality are the locker rooms (1.52), science labs (1.67), and auditorium (1.8) (with restrooms close behind at 1.9). Facilities with the most neutral comments include the resource room and guidance office (importance levels no higher than 3.3 and current condition no lower than 2.8).

Students: Facilities found to be of the lowest quality are the restrooms (1.65), locker rooms (1.7), and auditorium (2.07). Facilities with the most neutral comments include the resource room, music spaces, and art facilities (importance and current condition ratings are close in value and do not exceed 2.76 in importance nor drop below 2.26 in current condition). The guidance offices are found to be neutrally important and receive a comparatively high condition rating. Thus, both the faculty/staff and students feel that the locker rooms are in the poorest condition. They also agree that the restrooms and auditorium are in great need of repair.

Areas of Overlap (Importance):

Restrooms – We feel that this should be prioritized in whichever building alternative is selected – both the teachers and the students give the restrooms a quite high importance rating (possibly because they feel these areas are in such disrepair) and a very low current condition rating (1.92 teachers, 1.65 students). Students seem to think these are important spaces and their current quality quite poor – "very bad", "dirty", and "disgusting" are just a few of the adjectives employed. Cleaning up the restrooms is necessary according to those who use the building and is not very expensive; thus, we recommend that the restrooms be refurbished in any/all of the alternatives suggested.

Classrooms – While quite important to faculty/staff (rated 2nd) and students (rated 3rd), both groups seem to view classrooms as in generally reasonable condition. Students still have misgivings, though: "the air quality is terrible", "they are really cold", "desks/tables in poor condition" – one female 11th grader who rates classrooms at a 4 on importance and a 3 on current condition notes that "since we spend the most time in these, I think that they are the most important" while another mentions that they "need windows"). Teachers also note that some of the classrooms are too small (for classes of 25+) and the furniture is in ill repair. Many of the comments about the classrooms are linked to larger problems of the school, however (such as heating, air quality, etc). Thus, since the current state of the classrooms does not appear to be dire (as the relatively mild current conditions ratings suggest), we recommend renovating these facilities only under a major reconstruction or a total renovation. If funds allow in a minor renovation, new equipment for the classrooms seems appropriate.

Cafeteria – While both the faculty/staff and students list this as one of their top selections, we feel that this does not necessarily mean that it should be prioritized in construction, for each group seemed to think the current condition of the cafeteria is better than that of most other facilities. Students like the light, the open space, etc., but still have qualms ("not very clean"); a number of students are disappointed with the recent removal of the mural, one noting that the space is now "boring". The teachers rate this 6th on their list, with a fairly high level of importance and not an extraordinarily low condition rating. Accordingly, we do not see this as a priority for a renovation (perhaps the major renovation alternative if funds allow), but would recommend its revival under a complete reconstruction.

Gymnasium – Faculty/staff and students feel that the gymnasium is in satisfactory condition; while it is quite important to them, it does not appear to be an object of immediate concern. Students did have suggestions, however, including "needs new bleachers", "needs new supplies", and "out of proportion." Faculty is also concerned with meeting the size requirements of a gym, etc. We would recommend addressing the gymnasium in a major renovation or total reconstruction but do not see this as a big enough problem or priority to be included in a small renovation (since its current condition is, relatively speaking, not so dismal).

Areas of Discord:

Teachers rate the auditorium, library, computer lab, and science labs over 3.5 on their list of importance, while students only rated hallways over 3.5 (the other 4 overlap with faculty/staff concerns).

Recommendations, Indoor Spaces:

Facilties/Spaces Mentioned:

- restrooms
- classrooms
- cafeteria
- gymnasium
- auditorium
- library
- computer labs
- science labs
- hallways

(locker rooms – in most need of repair)

Minor Renovation Indoor Facility Priorities:

1. restrooms

Major Renovation Indoor Facility Priorities:

1. restrooms
2. classrooms
3. cafeteria
4. gymnasium
5. auditorium
6. library, computer lab, science lab (perhaps)

Complete Reconstruction Indoor Facility Priorities:

1. restrooms
2. classrooms
3. cafeteria
4. gymnasium
5. auditorium
6. library
7. computer labs
8. science labs
9. hallways

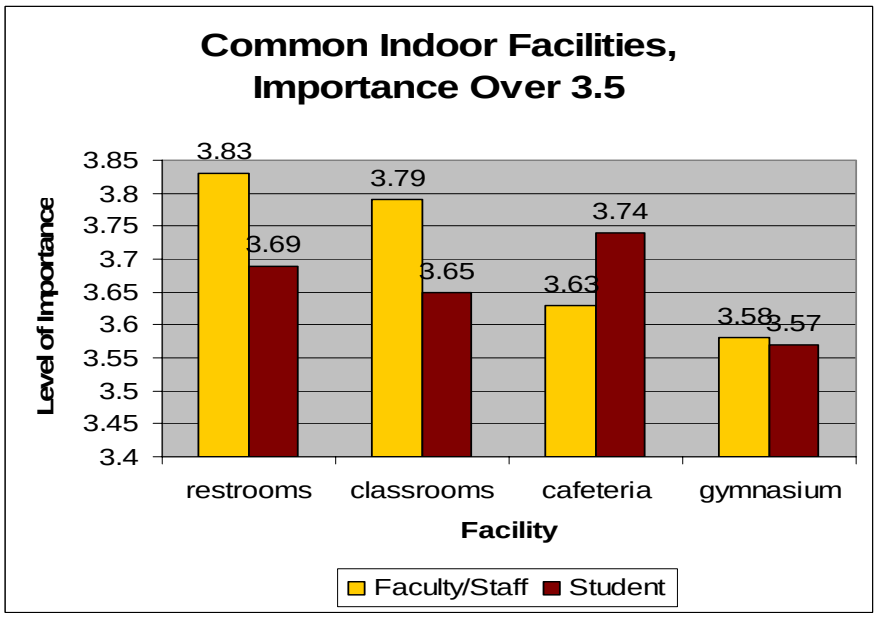


Figure 34

Comparing Faculty/Staff and Student Responses: Outdoor Spaces

Faculty/Staff Priorities (above 3.0) - Importance:

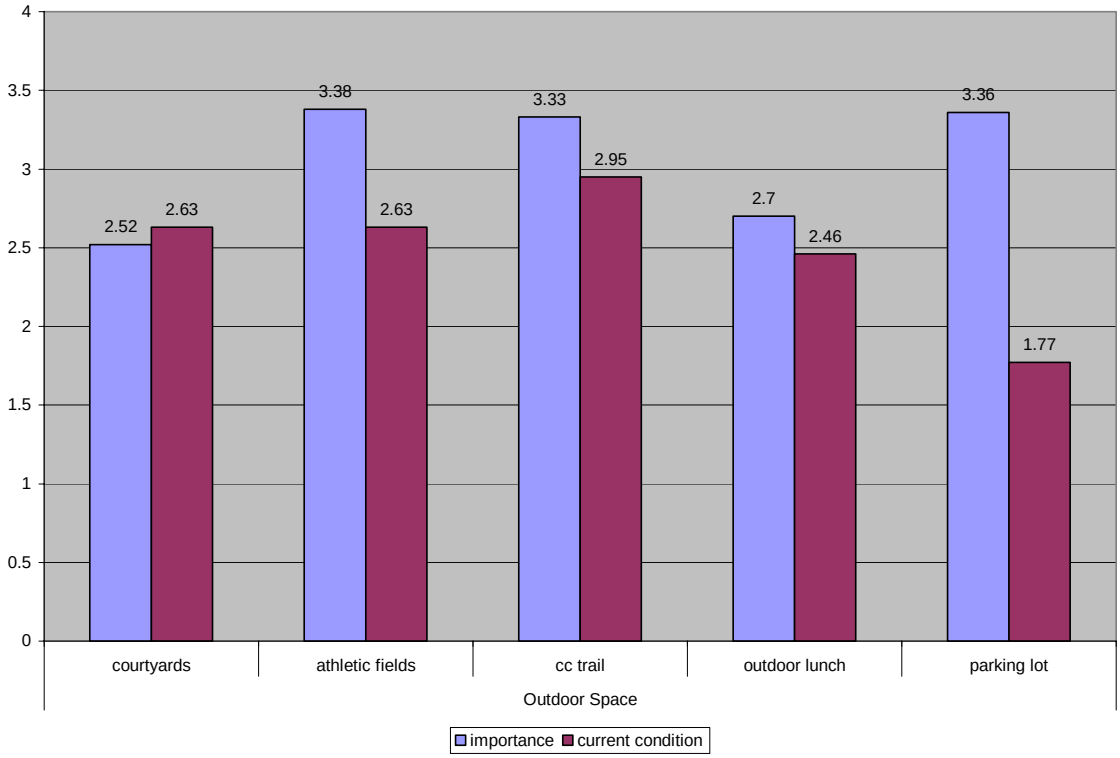


Figure 35

1. *athletic fields – 3.38 (2.63 current condition)*
   - fairly important but not in terribly poor condition
2. *parking lot – 3.36 (1.77 current condition)*
   - important and in fairly poor condition
3. *cross country trail – 3.33 (2.95 current condition)*
   - important and in pretty good condition!

Student Priorities (above 3.0) – Importance:

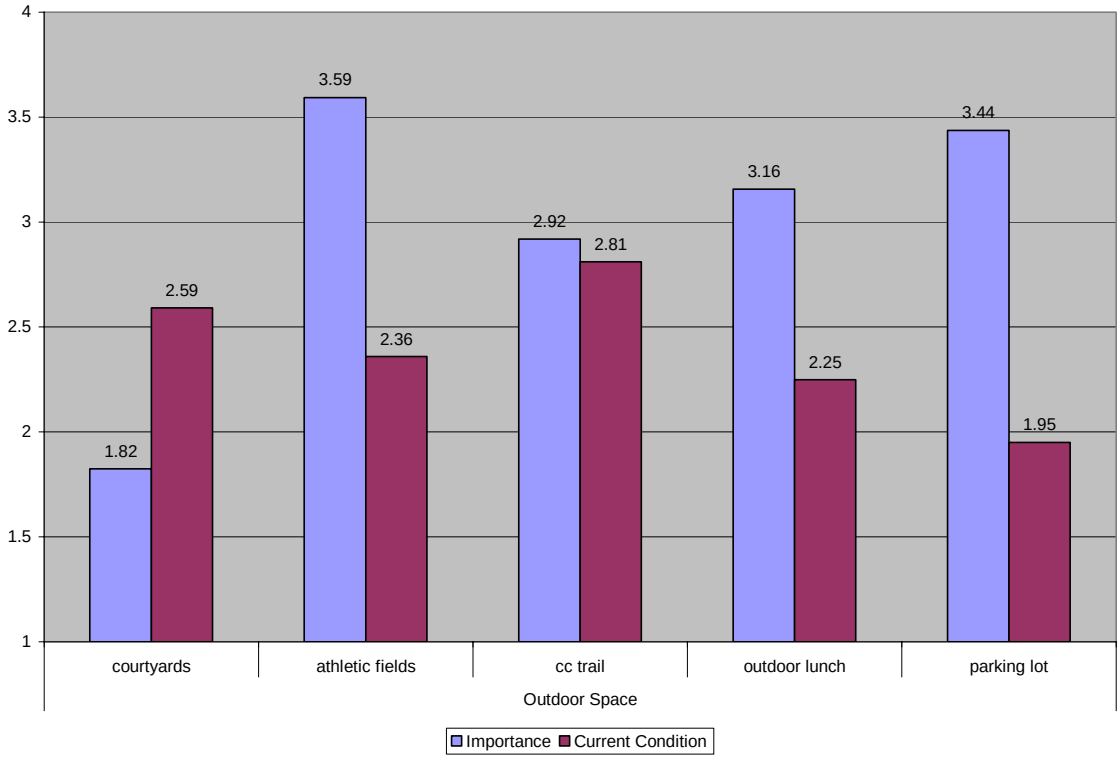


Figure 36

1. *athletic fields – 3.59 (current condition: 2.56)*
   - high importance level but also fairly good condition rating
2. *parking lot – 3.44 (current condition: 1.95)*
   - pretty important and with a low condition rating
3. *outdoor lunch – 3.16 (current condition: 2.25)*
   - important but not exceedingly so – moderate condition rating (room for improvement)

Conclusions:

Both the faculty/staff and students feel that the athletic fields are the most important outdoor space, yet each seems to be fairly satisfied with the current condition of the fields. Similarly, both feel that the parking lot is the second most important outdoor space, while dissatisfaction with its condition runs high (danger of the potholes is frequently noted). Both the cross country trail and the outdoor lunch spaces are mentioned, each in adequate condition (students seemed eager to improve the outdoor lunch area, however).

Recommendations, Outdoor Spaces:

Facilities/Spaces Mentioned:

- athletic fields
- parking lot
- cross country trails
- outdoor lunch area

Minor Renovations:

none

Major Renovations:

- parking lot

Total Reconstruction:

- parking lot
- athletic fields
- outdoor lunch area

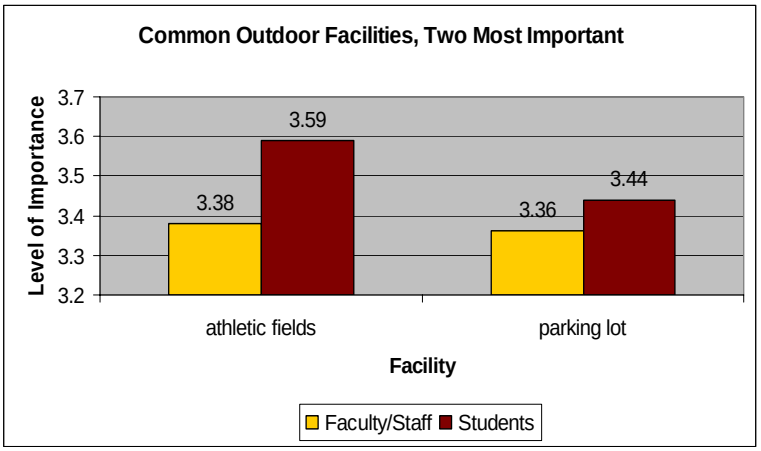


Figure 37

5. Criteria for Analysis: Energy Efficiency

We felt it was important to include the degree to which MGRHS would be energy efficient after each of the alternative constructions. This is important for us to evaluate not only because we are interested in energy efficiency as environmentally minded students, but because our client asked us to investigate ways to improve the efficiency of the building (through looking at green energy technologies). Ideally, increased energy efficiency would help in decreased energy costs over the long run. The degree to which an alternative promotes energy efficiency determines its feasibility. We decided to evaluate the energy efficiency variable with a weight of 1.

6. Criteria for Analysis: Environmental Impact of Construction

This criterion takes into account the impact on the land in renovating/constructing a new building. For example, it is reasonable to think that there would be a significant amount of waste generated and possibly harm done to the land in tearing down a building if it was not absolutely necessary to do so. While a 'no construction' or 'minor renovation' alternative might be less harmful to the immediate environment, we recognize that the effects of energy efficiency of the building on the environment are entirely separate (and are covered in the energy efficiency criterion). The feasibility of environmental impact of construction is determined by the degree to which a building project might harm the immediate environment of the area (1

= high impact, low feasibility, 5 = low impact, high feasibility). We decided to evaluate the environmental impact of construction criteria with a weight of 1.

7. Criteria for Analysis: Interviews/Professional Opinions

We interviewed a number of professionals regarding school construction in Massachusetts. These ranged from members of the Building Committee (Ann McCallum) and teachers in the community (Robin Lehleitner, David Livernois) to individuals who had undergone such change at other schools in Massachusetts (Paula Consolini – Williamstown Elementary, Ford Spalding, Libby Yon – Building Committee Co-Chairs, Dover-Sherborn Regional Schools). In these interviews we gathered different information based on the interviewee to help us gauge which construction alternative would best suit MGRHS. We have included the results of these interviews in the appendix of our report and incorporate the results of the interviews in our case studies and evaluation of alternatives. We decided to evaluate our interviews/professional opinions with a weight of 1.

C. Summary of Criteria for Alternatives Analysis

In the following pages we shall determine the alternative for construction we have deemed most suitable for the MGRHS and its community. We will evaluate each alternative based on the health impacts, cost, faculty/staff satisfaction, student satisfaction, energy efficiency, environmental impacts of construction, and interviews/professional opinions. We will weigh health impacts most heavily (3 times) and cost and faculty/staff satisfaction more heavily (2 times) than the remaining 4 criteria. We will evaluate each of the alternatives based on the feasibility of the aforementioned criteria and will come up with an overall feasibility rating for each alternative. In the end, the alternative with the highest feasibility rating is the one we shall recommend to the Building Committee for construction. We recognize our bias as environmental studies students and as non-professionals in the field (i.e. unable to effectively determine a cost-benefit analysis) in recommending this final alternative.

Criteria for Alternatives Analysis – Weight Given to Criteria

1. Health Issues - 3
2. Cost* - 2
3. Faculty/Staff Satisfaction - 2
4. Student Satisfaction - 1
5. Energy Efficiency (long term environmental impact)- 1
6. Environmental Impact of Construction - 1
7. Interviews/Professional Opinions – 1

*note: this is NOT the cost to the town, but the cost of the option as a whole – cost to the town will vary based on funding sources available

XI. Analysis of Alternatives (Feasibility Ratings)

A. Alternative 1: No Construction

1. Health Issues

As previously noted by both the faculty and students in response to the survey, the air quality in the school is very poor. The School Committee recently granted a paid leave of absence for a week for a teacher to recover from Sarcoidosis[38]. While this leave of absence was given without directly attributing the condition to the working environment, the teacher used the windowless room for a majority of this past year. Another major health concern of the current facility as emphasized by the students and faculty in the surveys is the lack of potable water. The perchlorate levels are currently too high to allow for the faculty and students to use the drinking fountains. Currently the heating system is also not working regularly, leading to a lack of proper heating in the winter months which is unhealthy for the faculty and students.

Therefore, we give this option a health feasibility rating of a 1.

2. Cost

While there will be no new costs that will have to be taken into consideration for this alternative, the current maintenance costs of operating the building will have to be factored in. These operating costs include the energy bills, the cost of bringing potable water into the school, and daily maintenance cost to keep the school from continually falling apart.

Therefore, we give the feasibility of this operating cost a 4.

3. Teacher Satisfaction

The general consensus of teachers on the current state of the school is that there are many issues that need to be addressed in order for MGRHS to be a space conducive to learning. The disrepair of many of the classrooms and other facilities, along with the poor air quality and the lack of ventilation in many of the classrooms, contribute to a general unrest among the faculty. The teachers' feelings of neglect and lack of respect in the present building has left many unsatisfied with current conditions.

Therefore, the feasibility of this option as represented by the faculty is a 1.

[38] Marcisz, Christopher. "Sick Mt. Greylock teacher granted leave of absence." Berkshire Eagle. April 2005.

4. Student Satisfaction

The students at MGRHS are also fairly unhappy with the current state of the school. The windowless rooms and poor air quality were highlighted in their survey responses. The poor condition of the everyday spaces such as the locker rooms, restrooms, and classrooms makes the students feel that their well-being is neglected by the community and faculty.

Therefore, the feasibility of this option as weighted by student opinion is a 1.

5. Energy Efficiency

As the boiler system, water pumps, the HVAC system, the Air Conditioning units, the water tanks and the hot water systems are all increasingly outdated, energy costs are rising due to recent global trends and these facilities are becoming less efficient every year. The implementation and maintenance of these facilities does not take into consideration environmental concerns or modern day energy efficiency possibilities.

The feasibility of the no construction option with respect to the current efficiency of energy leaves this option at a 1.

6. Environmental Impact of Construction

In the no construction option, the school continues to operate on energy production units from the 1960s. The fact that the school is already situated in its location and no construction of any type would take place would mean no disturbance of the land around the school.

The feasibility of this option with respect to environmental concern is a 4.

7. Interviews/ Professional Opinion

According to all of the interviews conducted and professional opinion sought, it is necessary to improve the condition of the school due to the current general state of the school, the poor air quality, and the lack of controlled temperature. The poor physical state and psychological state of the faculty and students dictates that something must be done in order to make MGRHS a place where people want to learn and teach.

This option would be given a feasibility rating of 1, according to interviews conducted.

Alternative I Conclusions

Based on these factors, Alternative 1: No Construction, has a feasibility rating of 1.82.

B. Alternative 2: Minor Renovation

1. Health Issues

This option would address the air quality and the potable water issues in taking action to improve both systems. Also, if the school underwent a renovation, it would have to become ADA compliant, which

would enable greater access to the school for everyone. The heating system would be addressed in this minor renovation, creating a solution to that issue as well. The health of the 50 year old building will continue to fail to offer the highest levels of clean air without a major solution.

By addressing health issues, this option has a feasibility of a 4.

2. Cost

The cost of the few renovations that would take place in order to extend the life of the current building is not insignificant. The replacement of the two boilers, the installation of an improved air quality system and the upgrade of MGRHS to facilitate for ADA standards will be about 1.5-2 million dollars. As noted previously in the summary of alternatives, the cost of bringing the school up to ADA codes alone would cost approximately $108,700. Funding for a minor renovation could be partially covered by a grant from the Massachusetts School Building Authority as of July 1, 2007, with 5 extra points for the fact that the old school was being renovated instead of a brand-new construction project.

Feasibility of this option with respect to cost would be a 3.

3. Teacher Satisfaction

The faculty surveys noted that the faculty would support the decision to improve the air quality and heating systems as the first steps to renovating the school. Improving the health standards of the school and fixing the minor problems would show the faculty that there is a desire to improve MGRHS and support from the community to improve the facility. While the physical space of the school would remain the same, there would still be underutilized areas and classrooms that would continue to be viewed as too small. As the restrooms were highlighted as the areas that were in very poor condition, attention would have to be given to improving their state in order for the faculty needs to be met.

Faculty opinion on this option would give this a feasibility option of 2.

4. Student Satisfaction

While a minor renovation would address mainly the health issues facing the students of MGRHS, many of their concerns would not be addressed in this option. As shown through the student surveys, the restrooms would have to be attended to in a minor renovation to meet student needs. While this option would increase the feeling of community and faculty caring for the students, the general sentiment is that the school needs a lot of attention before it can be considered a great psychological boost to the students. Students would appreciate the increased air quality and heating systems and potable water, which were all issues highlighted in the student surveys as demanding attention.

Student opinion on this option would give this a feasibility of 3.

5. Energy Efficiency

By replacing two of the three boilers and removing the need for potable water to be brought into the school, energy efficiency would increase over the current condition. Depending on the air quality system put in place, energy efficiency to run the system could be improved or not.

Based on energy efficiency, the feasibility of this option is a 2.

6. Environmental Impact of Construction

While the majority of the minor renovations would impact the inside of the building, the environment impact of construction would not be very great. Also, with the increased efficiency of the heating system, the demand for the fuel would be decreased, therefore limiting impact as well. However, there would still be some disturbance of the area as these renovations were taking place.

The feasibility of this option, according to the environmental impact is a 4.

7. Interviews/Professional Opinion

The general sentiment from the interviews we conducted indicated that a minor renovation would be preferred over no construction; however, the implications of taking the effort to conduct a renovation would encourage further renovation to take place. While the minor renovation was supported as a quick-fix, it was not considered the best option for the sustainability of the building.

Interviews would give this a option a feasibility rating of a 2.

Alternative II Conclusions

Based on these factors, Alternative 2: Minor Renovation, has a feasibility rating of a 3.

C. Alternative 3: Major Renovation

1. Health Issues

A large-scale renovation of the school would presumably fully address all of the current health issues of MGRHS: air quality would improve to a highly satisfactory level and likewise the reliability of heating. The water issue would also have to be resolved.

Thus we give this option a health feasibility rating of 5.

2. Cost

The cost of a major renovation of the school would likely be on the order of the cost of an entirely new school building and could, in the case of the need to completely gut the inside of the school, even exceed

the cost of new construction. Given the overall dissatisfaction with the school's current program on the part of the students, faculty, and staff, this option may well require such a drastic scale in order to achieve its purpose. The MSBA has also stated that if a school is completing a major renovation, rather than a total reconstruction, 4 extra percentage points will be factored into the amount of funding that MGRHS can qualify for.

Therefore, we give the feasibility of this option in terms of cost a rating of 2.

3. Teacher Satisfaction

A major renovation would ideally placate the faculty's dissatisfaction with the state of the current facilities. According to the survey results, the faculty were overwhelmingly concerned both with the physical state of the building and with the inadequacy of the technology, and this option would address these issues. However, the retention of the building's exterior structure would limit the possibilities for programmatic improvement to some extent (hallways would be kept, classroom sizes could be changed).

The feasibility of this option as represented by the faculty is 4.

4. Student Satisfaction

Similarly, the survey results found the students highly dissatisfied with the school's physical conditions, and a major renovation would fix many of these problems. Also, a major renovation would open possibilities for improvements in the program suggested by students in the survey and for general improvement in the school's attractiveness to its students. Again, the possibilities would be somewhat limited by retention of the school building's basic structure.

The feasibility of this option as represented by student opinion is 4.

5. Environmental Impact of Construction

The environmental impact of construction in a major renovation would be quite a bit more than for minor renovation, as it would generate a larger amount of waste. However, given this same factor, the impact of this option would probably be significantly less than for construction of a whole new building. Also, in the long run, retrofitted green materials and methods could lead to a much lower sustained impact on the environment.

Therefore, we give this option an environmental impact rating of 3.

6. Energy Efficiency

While many improvements could be made to the long-term efficiency of the energy system if a major renovation was completed, there are several inherent flaws with the current structure that would limit

efficiency. The thinness of the walls and current windows allow a lot of heat to escape from the building, decreasing efficiency. Also the long-term energy efficiency will depend on the choices that the architect makes as to which systems will replace the current ones (in addition to the size of the building – smaller buildings require less energy to heat, etc.).

This option has a rating with regard to energy efficiency of 4.

7. Interviews/Professional Opinion

We were advised that, given its construction in 1960, the building's basic structure is most likely not sound enough to warrant major renovation over complete reconstruction (Ford Spalding, Libby Yon).

This option's feasibility according to interviews and professional opinion is 2.

Alternative III Conclusions

Alternative 3: Major Renovation was given a overall feasibility rating of 3.55.

D. Alternative 4: Total Reconstruction

1. Health Issues

A new school building would presumably have none of the negative health effects that the school currently does, especially if an onsite source of potable water is found, as now appears possible. In addition it could be built for positive health effects, with features such as consistent day-lighting.

Therefore, we give this option a health feasibility rating of 5.

2. Cost

The cost of construction of an entirely new school building would be much greater than that of minor renovation but could well, according to our research, have a net lower price than a major renovation, given the greater depth of funding resources available for reconstruction as opposed to renovation. Also, use of green building technologies could make for much greater energy efficiency, lowering long-term operating costs.

Therefore, we give this option a cost feasibility rating of 2.

3. Teacher Satisfaction

New construction would provide the greatest possibility for teacher satisfaction of all the options because it would leave open the most possibilities for physical, programmatic, and aesthetic improvement upon the school's current condition.

Therefore, the feasibility of this option as represented by the faculty is 5.

4. Student Satisfaction

Likewise, new construction would provide the greatest potential for student satisfaction by creating a pleasant physical setting and possibly adding program changes desired by the students.

Therefore, the feasibility of this option as represented by student opinion is 5.

5. Environmental Impact of Construction

The environmental impact of new construction would initially be quite high, since it would require tearing down and disposing of pretty much the entire current school building, unless innovative salvage methods were employed. However, if green technologies were employed in the new school's construction and operation, its long-term environmental impact could be much lower than that of the current school building.

Therefore, we give this option an environmental impact rating of 2.

6. Energy Efficiency

The energy consumption an entirely new building would have the highest potential of all of our alternatives for being efficient. The new building's structure could be built specifically to maximize energy efficiency with insulating windows and thick walls to maintain the heat levels. Also the ventilation system and other systems could be chosen with attention given to their potential energy efficiency levels. Therefore, we give this option an energy efficiency rating of 5.

7. Interviews/Professional Opinion

From interviews and consultations, it appears that on the whole, total reconstruction is more feasible than a major renovation, especially given the somewhat tentative state of the current building's structure, as well as the possibility of better funding for complete reconstruction.

Therefore, we give this option a feasibility rating according to interviews and professional opinion of 4.

Alternative IV Conclusions

Alternative 4: Total Reconstruction was given a feasibility rating of 4.09.

	Health	Cost	Faculty/Staff Satisfaction	Student Satisfaction	Energy (long-term)	Environment (construction)	I/PO	**Weighted Mean**
Alternative 1: Do Nothing	1	4	1	1	1	4	1	**1.82**
Alternative 2: Minor Renovation	4	3	2	3	2	4	2	**3**
Alternative 3: Major Renovation	5	2	4	4	3	3	2	**3.55**
Alternative 4: Reconstruction	5	1	5	5	5	2	4	**4.09**

Figure 38

E. Summary of Alternatives Analysis

Total Reconstruction received the highest feasibility rating based on all of the factors that we weighed into the analysis of each alternative. Although many of these conclusions as to the feasibility of each factor were subjective and should be read as an educated opinion offered by a team of college students, each decision was carefully deliberated and all benefits and costs were taken into consideration. These decisions were also made without a definite plan for each alternative, therefore allowing for fluctuation of each value as there may be different understandings of what constitutes a minor vs. a major renovation or total reconstruction. The feasibility ratings of each factor that will affect each alternative could vary depending on the interests of those involved; however, we tried to represent many vantages in our process.

XII Final Recommendations

A. Re-site the School

While the school Building Committee is reluctant to consider moving the building to a different piece of land, there are many good reasons to consider a relocation of the school on the current plot of land. Such a relocation would allow the school a chance to seriously consider both the location and conditions of its various sports fields and reorganize the outdoor space surrounding the school (many of the students noted that these outdoor spaces were in fact their favorite places in MGRHS). This relocation would also allow the school to manipulate the relationship between the school and the parking lot (an amenity which faculty and student both agree needs serious work regardless of location). The parking lot is currently much larger than is necessary (it is almost always about half empty) and stands menacingly in front of the school, blocking pedestrian access to the front door of the school. There are no sidewalks or places useful to pedestrians, and the main entrance of the school is both physically and symbolically diminished by the mammoth parking lot. A new location for the school would allow the parking lot to be relocating behind or to the side of the school with the potential for a pedestrian-friendly main entrance that also allows for bus and car drop offs, but no parking. A new site for the school could also set it on an East-West access in order to maximize exposure to the sun (a feature that would be especially useful if the new school building had more windows than the old one or featured photovoltaic cells).

Figure 39

B. Conduct a Space Survey

In order to make sure the school is as space efficient as possible we recommend that the school conduct a space survey similar to that which the Williamstown Elementary School project utilized. These surveys simply ask teachers to track their use of the building for a week at a time and also include observation of the school building's usage during the day by those conducting the survey to see which spaces in the school

are over and under used. The WES Building Committee did a space survey in order to look at ways of cutting down both space and costs in their new building and was able to discover a number of adaptable multi-function spaces. This is applicable to our faculty/staff survey where many teachers expressed a desire for smaller meeting rooms which could potentially serve a number of different functions. It also seems useful to explore the utility and feasibility of sub dividable and flexible spaces (what if a teacher's room could become an open room that students could take tests in during his or her free periods, or what if the cafeteria could somehow be made a flexible space that accommodated the separable functions of both cafeteria and student lounge?). A space survey is the only way to know for sure exactly how much the current square footage of the school can be cut down without infringing upon the utility of the school. It can also explore circulation patterns and look into useful ways to make them less circuitous. A quick look at the inefficient functional layout of the school (as well as an awareness of the essential things it lacks: smaller workrooms, teacher spaces, department spaces) goes a long way in understanding both the essential limitations of MGRHS's floorplan as it exists and the necessity for some sort of action.

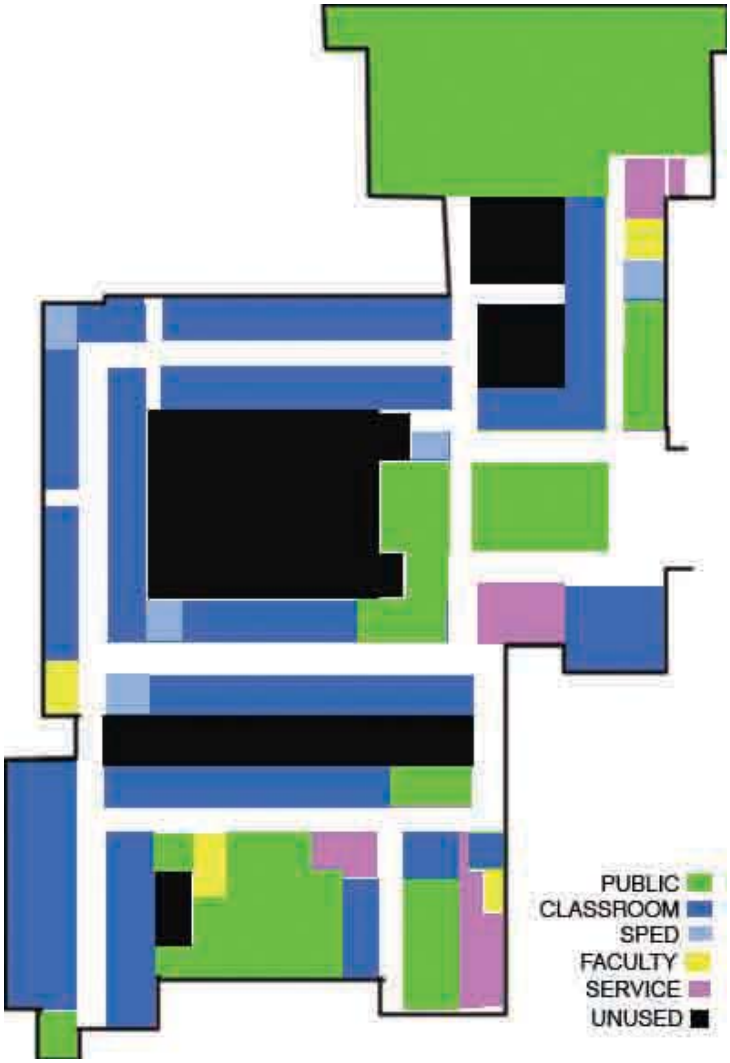


Figure 40

C. Incorporate Green Building Techniques

Incorporating green building technologies could ultimately both save money and increase the anticipated lifetime of the school. Given the high levels of faculty and student dissatisfaction with the school's current

health problems, environmentally friendly building techniques such as vinyl backed carpet, 'green' carpet, linoleum tiles, low VOC carpet, and paints which maintain a higher level of IAQ might go far to reconcile much of the faculty and student discontent with the building as it is. Given the school's budgetary concerns and the energy inefficiencies of the current building, it seems useful to at least explore the potential to daylight the school (including automatic shut off, and sensors which can adjust the level of the lights), to use insulating materials to reduce heat loss, to use low-E coating on the windows, to explore the potential success of photovoltaic cells on the roof (the elementary school can serve as a direct example to the usefulness of this particular endeavor), and to explore more efficient HVAC systems. Because the budget is tight, much of this will depend on potential sources of funding and the anticipated ability of these various technologies to ultimately pay for themselves. Regardless, on both a symbolic and a physical level, green technologies offer the school the opportunity to entirely remake itself.

Figure 41

D. Include a Potential Community Use

One of the factors that was crucial to the Dover-Sherborn school success was the extent to which the school involved the local elderly community (a group which traditionally votes against new school construction) in the project by including the potential for them to use the school's auditorium to screen movies on the weekends: "we tried to involve everybody, that was the only way to get it through"[39]. Community uses of the school could be something as simple as having students teach computer classes to the elderly population of immediately adjacent Sweetbrook Nursing Home as an extracurricular activity after school, or as complex as having a public sports facility on the school's campus. This is both a way to increase the percentage that the MSBA will fund by up to 3% and to entice community members who are childless to vote for the proposal (note that there are restrictions on community uses that the MSBA will fund, such as swimming pools). Including community functions also allows the school building to be a more useful building, increasing the number of hours per week it operates. Due to its overwhelming concern with

[39] From interview with Ford Spalding.

making the school an amenity to the entire community, the Dover-Sherborn school district had overwhelming success when bringing the project before town meetings.

E. Involve the Community

A lesson that we've learned both from our knowledge of the Williamstown Elementary School project and the Dover-Sherborn project is the extent to which involving the community in every step of the process is essential to its success. Ann McCallum, a member of the WES Building Committee, talks about the ways in which the school reached out to the community and asked people to volunteer services to the new school (from interior design to gardening). In her opinion, it was the network of people who felt involved and invested in the project that ultimately helped it pass. In the Dover-Sherborn school district, the enlarged and inclusive Building Committee (with 30 members consisting of students, teachers, experts, and community members) helped all parts of the communities feel as though they were an active part of the planning process. We would suggest that the MGRHS project take these instances of community involvement seriously in planning their own project and truly make an effort to involve both the Williamstown and the Lanesborough communities at every step of the process. If individuals feel that their concerns are addressed, they will be more likely to pass the proposal, regardless of their connection to the school (student parent, senior citizen, etc.). We would suggest that the Building Committee encourage outside attendance at their meetings and have some sort of a forum for public input (perhaps a website like the Dover-Sherborn project or a set of suggestion boxes like the Williamstown Elementary project).

XIII. Conclusions/Design Suggestions:

1. Relocate the parking lot
   - -create better vehicle circulation
   - -provide school with functional and symbolic front entrance
2. Explore the potential for two-story construction
   - -minimize footprint, improve interior circulation
   - -lower energy costs
3. Increase Southern light exposure
   - -more daylight in school rooms, potential for increased energy efficiency
4. Decrease the shared functions of Middle and High School
5. Centralize/Segregate shared spaces
   - -easier access to all student using them
   - -segregate social spaces in order to minimize noise disturbances
6. Include rooms of varied sizes
   - -create different sized rooms for different functions
   - -satisfy faculty needs more fully
7. Explore potential for multi-use/ flexible/ sub dividable spaces

Final Words:

Building a school is not an easy project (if we've learned nothing else from this report, we will certainly take that way). It is often difficult to get funding, and building costs are expensive. It seems hard to visualize MGRHS as a new, high-performance school, and yet what I think we have learned from the process is that nothing is ever achieved in public projects without vast amounts of both public involvement and ambition. It's infinitely easier to scale down a public project to accommodate funding resources than to anticipate them and plan accordingly, and the creation of a new school is going to need a lot of blue sky thinking if the school is going to be any good at all. If our technical recommendation is to construct a new school, then along with this comes our real piece of advice which is to think big for MGRHS's future, and to involve the community in this thought process. If and when people are excited, only then will anything get done, and the more invested and dedicated people are to the project the higher the chances that it will be a good one. More than MGRHS needs a new school building, it needs an open forum for its community members to express their frustrations and joys with the school and conceptualize the next step together.

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APPENDIX

Table 1: Faculty/Staff Opinion on Outdoor Space Importance

	Outdoor Space				
	courtyards	athletic fields	cc trail	outdoor lunch	parking lot
1	3	0	0	1	1
2	10	3	2	7	3
3	8	9	10	13	7
4	4	12	9	2	14

Table 2: Faculty/Staff Opinion on Indoor Space Importance

	Indoor Space						
	cafeteria	auditorium	library	gym	locker rooms	bathrooms	guidance
1	0	0	0	0	0	0	1
2	0	1	1	1	3	0	4
3	9	5	6	8	9	4	7
4	15	18	18	15	9	20	12

	Indoor Space						
	hallways	computer lab	science lab	classrooms	resource room	art	music
1	0	0	0	0	0	0	1
2	0	1	1	1	3	0	4
3	9	5	6	8	9	4	7
4	15	18	18	15	9	20	12

Table 3: Faculty/Staff Opinion on Outdoor Space Current Condition

	Outdoor Space				
	courtyards	athletic fields	cc trail	outdoor lunch	parking lot
1	1	3	0	2	13
2	10	5	4	11	8
3	14	14	12	9	3
4	2	2	3	2	2

Table 4: Faculty/Staff Opinion on Indoor Space Current Condition

	Indoor Space						
	cafeteria	auditorium	library	gym	locker rooms	bathrooms	guidance
1	2	10	4	4	13	10	1
2	8	10	11	7	8	10	5
3	14	5	10	14	2	4	14
4	2	0	1	2	0	2	6

	Indoor Space						
	hallways	computer lab	science lab	classrooms	resource room	art	music
1	2	10	4	4	13	10	1
2	8	10	11	7	8	10	5
3	14	5	10	14	2	4	14
4	2	0	1	2	0	2	6

Table 5: Student Opinion on Outdoor Space Importance

	Outdoor Space

	courtyards	athletic fields	cc trail	outdoor lunch	parking lot
1	117	5	25	10	17
2	117	25	59	46	24
3	44	53	116	120	63
4	11	205	84	110	181

Table 6: Student Opinion on Indoor Space Importance

	Indoor Space						
	cafeteria	auditorium	library	gym	locker rooms	bathrooms	guidance
1	3	13	21	6	12	8	34
2	8	41	37	23	25	10	57
3	51	124	119	61	100	45	105
4	225	108	110	196	149	221	89

	Indoor Space						
	hallways	computer lab	science lab	classrooms	resource room	art	music
1	3	13	21	6	12	7	34
2	8	41	36	23	25	10	57
3	51	119	113	60	98	44	100
4	218	107	109	189	143	215	88

Table 7: Student Opinion on Outdoor Space Current Condition

	Outdoor Space				
	courtyards	athletic fields	cc trail	outdoor lunch	parking lot
1	20	50	18	54	103
2	111	100	78	121	109
3	123	127	123	97	58
4	33	13	62	15	16

Table 8: Student Opinion on Indoor Space Current Condition

	Indoor Space						
	cafeteria	auditorium	library	gym	locker rooms	bathrooms	guidance
1	29	66	12	21	136	143	16
2	117	145	77	67	106	108	47
3	127	69	148	139	40	33	147
4	17	9	52	59	6	5	72

	Indoor Space						
	hallways	computer lab	science lab	classrooms	resource room	art	music
1	28	64	11	20	134	141	16
2	115	140	75	67	104	104	45
3	124	69	143	132	38	32	143
4	17	9	51	59	6	5	69

Table 9: Student Opinion on Dream Facilities/ Class Spaces

Ranking	wood shop	photgraphy	observatory	pool	tennis ct	ice rink	kitchen	dance studio
1st	4	23	1	26	14	17	5	11
2nd	17	31	9	33	15	17	18	9
3rd	19	19	6	30	10	12	14	13
total	40	73	16	89	39	46	37	33

Ranking	student lounge	garden	ropes course	automotive repair	track	metal shop	theatre	add. Computers
1st	60	2	4	12	30	10	19	5
2nd	47	5	12	16	25	23	15	9
3rd	40	5	12	18	17	12	15	5
Total	147	12	28	46	72	45	49	19

Table 10: Student Opinion on Environmental Options

	more windows	recycling	solar energy	drinkable water	bicycle/ped access
1	33	19	24	4	53
2	28	26	36	0	52
3	54	72	65	7	61
4	70	73	56	24	47
5	76	74	53	246	24
no opinion	21	18	49	4	45

Faculty/Staff Responses to Page 2 Open-Ended Questions:

1. ADDITIONAL FACILITIES

-better planned school (F Music) – space and equipment are inadequate, the auditorium an embarrassment
-storage for musical instruments, theater props, and scenery (M History)
-A social area for kids to gather and talk (as opposed to using the library for this!) (F Library – S. Idenny)
-Common meeting areas for students and teachers (F Science)
-more lab space: gas jets in science rooms don't work – more sinks in science rooms, more electrical outlets in science rooms (P.Talbot – F Science)
-none (M Science – Shawn Burdick)
-none (M Science – Scott Burdick)
-a. home economics room, b. shop – wood and metal, c. photography darkroom, d. track (F Latin)
-more conference room space, college and career center located directly next to guidance office, student computers in guidance office, divided cafeteria (one side for less outgoing students) (F Guidance)
-diverse learning/teaching environments for each department – one or two computer labs: for math – several classrooms set up for hands-on exploration (tebbs), one or two rooms set up for lectures, one or two rooms with a smart board (M Math 2 – Mike Caraco)
-larger classrooms to accommodate classes of 27-31 students (F English)
-guidance needs another meeting room, comfortable sitting areas for kids and adults – we want to foster healthy relationships (F English, Bradley)
-quiet rooms for test make-up, group work, etc. (F English)
-the facilities are not up to par and are certainly outdated. I would like to see a new building, without penny pinching, reflect the needs wants and be representative of what this community deserves. (Ray Miro)
-helpful to have small room of Resource Room to test student or isolate student having difficulty – similar to science storage connection rooms – need kitchen area and class space for sped population (unmarked)
-larger more up to date science facility, more computers in classrooms (upgraded) (unmarked)
-teachers' workspace that is USED and USEFUL (F unmarked)
-testing rooms, meeting rooms (F unmarked)
-increase in technology spaces, science labs and library. Every student needs more time in these facilities. A new facility that is used for life skills learning – all grades (for all students). A pool for classes and recreation. (F staff – S. Broch)
-we need a campus track/tennis courts (unmarked)

-improved computer labs, the library should be in the center of the building, small conference roos that are easily monitored but allow students to work in small groups (F unmarked – Kathleen Share)

2. IMPROVEMENTS NEEDED

-fine and performing arts should be a coordinated area (F Music)
-(Re: facilities need to be renovated/updated) → All of them! (M History)
-The library heating system is poor. The vents are located upstairs so no heat comes down. The air is bad – my eyes are red and dry and my nose runs. (F Library0
-Air quality; consistent heat throughout the year; Greenhouse (to be updated) (F Science)
-middle school science rooms are OUTDATED; 2 sinks for 27-31 students in a room; 3 outlets. For up to 31 students in a class (MCAS science tests will count for graduation) (F Science P.Talbot)
-none (M Science S.B)
-none M Science Scott B)
-new computers in classrooms, more computer lab for classroom use (F Latin)
-there are several unsafe classrooms or those without windows (poor air circulation)
-meet the technological advancements with the needs a classroom requires (M Math)
-see #1 (M Math 2)
-technology/meeting lab? (F English)
-new furniture, something to make a room inviting. More computers in my classroom (2 more would be helpful) (F English, Bradley)
-technology in the classroom (all) (F English)
-Desks are disgusting, old and wobbly. My computer never works yet I'm required to read my emails every day. (F English)
-need better access to electricity – outlets in front and back not conducive to extra computers, tape recorders (unmarked)
-air quality, cleanliness (unmarked)
-tech. update → new computers (F unmarked)
-classrooms that will support life skills instruction such as cooking. Bookcases built in and more storage is needed, more outlets. (F unmarked)
-storage space, cosmetic changes, overall uplift. More comfortable furniture – we need to have a conference room instead of using the exercise room for appropriate activities (Ray Miro)
-computer, TV hook ups that work, printers that work, blinds that work, windows that open and computers for student use – or at least one extra – heating system that works with air filter. (F unmarked)
-working televisions in classrooms, along with extra computers, enough lighting, cleanliness and proper ventilation. The pond area is not used and would provide for a different type of learning. (F staff – S.Broch)
-the gym area – broken bleachers wrongly marked floors, certain walls – dark lighting, windows sun glare and locker rooms are outdated + horrible (unmarked)
-the science labs, guidance offices, the library, most classrooms, principal's office – A mini computer lab in the library allows students to work but the computers are old and frustrating (F unmarked – K.Share)

FACILITIES ENLARGED

-Computer labs (F Science)
-M.S. Science classrooms – space in back FOR LAB and space in front for regular class work is needed (F Science P. Talbot)
-none (M Science S.B)
-none (M Science Scott B)
-classrooms are strained with current class sizes, storage is anemic and an ill repair (file cabinets, shelves, closets)
-computer labs (F English)
-middle school classrooms (F English, Bradley)
-If we're to have 25+ students in a class, we need larger space. Look at ADMIN office, guidance and SPED – huge spaces for fewer people (F English)
-science (unmarked)
-physical education/locker room facilities
-gym, auditorium, cafeteria, many classrooms (F staff-S.Broch)
-most classrooms (F unmarked – K. Share)

3. FACILITIES UNDERUSED

-cold corridor, Japanese garden, storage areas near greenhouse (F Science)
-the "theater", the greenhouse (M Science SB)
-secret rooms (F Latin)
-college and career center (poorly located currently), library (F Guidance)
-(seem underused) some office space between science rooms, the corridor between Principal's Office and Guidance, Greenhouse and end rooms in Greenhouse corridor, Suite at end of North Corridor (F English, Bradley)
-the school needs to be open more for students and commuting members (Ray Miro)
-none (F English)
-small science lab rooms (unmarked)
-clustering of departments would lead to the more effective use of space and communication (unmarked)
-auditorium, guidance office (career center) (F unmarked)
-greenhouse and library (F unmarked)
-corridor between middle school and gym – "cold corridor" (F unmarked)
-greenhouses, library, A-V theater (F staff – S.Broch)
-the library is like a Firehouse. Some periods have only a few students and the next may have 2 classes. If there could be a monitor in the computer lab during free extended periods more students could use them. (F unmarked – K.Share)

4. ALL NON-CLASSROOM SPACES USED

-library, administrative offices daily (F Music); hallways, restrooms often each day
-computer lab 1 time per quarter, hallway hourly, restroom daily, library weekly, auditorium weekly, music rooms daily (M History)
-computer lab 1 time per week, greenhouse 1 time per week, library 1 time per month (F Science)
-computer lab – 3 days per quarter; not enough computers in room for large classes (F Science P Talbot)
-library (once a week), hallway (occasionally for teaching – often for getting from one place to another), bathroom (occasionally), wave tank (occasionally) (M Science SB)
-hallway used all day (M Science Scott B)
-library (6-10 times per annum scholae) (F Latin)
-S (or 5)-1 conference room (often) (F Guidance)
-computer lab (once per month), library (once per month), teacher's room at the end of the south corridor (once per day), hallways (many times), restrooms (once per day), teacher's work room (once per day), Principal's office copier (2 times per week) (M Science 2)
-library/computer room (not often) (Ray Miro)
-computer lab (4-5 times/year) – technical difficulties in conjunction with large classes, computer labs are not feasible – they are not meeting the students' needs. There are not enough working computers for classes of kids! (F English)
-Video Room (for class showing of film – 2 times yearly), computer labs (2.5 weeks yearly per class), obviously hallways (informal conversations) daily, library (as often as possible) (F English, Bradley)
-computer lab (several times a quarter), faculty resource room (every day), library (several times a quarter) (F English)
-computer lab, hall (F English)
-computer lab (once per week), library (once per month), hallways (ten times per day) (F unmarked)
-hallway (all day), computer lab (never), teacher's dining room (F unmarked)
-hallway exit to courtyards – weekly (tests, skits, makeups) (F unmarked)
-informal – at least 50 times a day, depending on schedule (F staff – S.Broch)
-we work with classes in the computer lab almost daily and are in the halls many times a day (F unmarked – K.Share)

5. SPACES WITH PROXIMITY ISSUES

-The library is too far away from the Middle School – it should be in the center of the school. (F Library)
-Gym/art room → Room 68/Greenhouse (F Science)
-a computer room that is like the one in the library needs to be available; the library one is usually filled all year (F Science P Talbot)
-none (M Science SB)
-none – we have a small school (M Science Scott B)
-college and career center (F Guidance)

-Kay's room (photocopying and recycling) is on other end of building – should be more central….layout seems poor (M Math 2)
-Library – short periods make using the library difficult, given the distance from the library. Computer lab – one in West wint – used by teachers – teacher computer literacy. Often inaccessible. (F English)
-gym to my room (kids are often late) or any classroom (F English, Bradley)
-all programs should be housed at Greylock (Ray Miro)
-cafeteria and library seem to be out of the way for most students (F English)
-all English department faculty are spread around the ENTIRE school with NO central office (which is a contractual promise) (F English)
-supply/copy center is not centrally located, special ed. Class is "off the beaten path", nurse's office is not centrally located (unmarked)
-NURSE'S OFFICE! (F unmarked)
-gym, cafeteria from middle school (F unmarked)
-gym and E hallways to cafeteria, library area. Location of copy machines, E corridor, central W corridor and no corridor to library (F staff – S.Broch)
-the library is too far away from the Middle School – as well as is the café (F unmarked – Kathleen Share)

6. ADDITIONAL COMMENTS

-we've had roofing problems – floor tiles are cracked or missing; heating is inadequate – noisy ventilation in the choral room; very poor to aggressive heat in fall and spring – w/no air flow (F Music – M. Walt)
-ALL parts of this school are in desperate need of systematic and thorough renovation!
-I think the space we have is not well utilized/organized. There is a lot of wasted areas. (F Science)
-Middle school science rooms need to be completely redone! (F Science P Talbot)
-building is basically ok – we can do our jobs (M Science SB)
-yes – the only thing I can see that really needs work are a few of the lockers in halls, and our water problem. I think that what goes on INSIDE the building is more important than what materials the classrooms are made of. When money is tight make sure education excels (M Science Scott B)
-the building needs updating. It's not merely a matter of space it's a safety and health issue. There is poor air circulation within the building.
-My department is so spread out, I feel very isolated in my island kingdom. I miss my colleagues. (F English, Bradley)
-We need to sit down and develop a school that provides programs and needs for all students. Instead of shopping kids out we need encourage kids to come to our school – provide programs and facilities like in the movie Field of Dreams. "If you build it they will come." (Ray Miro)
-The air, mold etc. in the building is a huge concern (F English)
-library is not centrally located, school administration is not centrally located (unmarked)
-make the facility handicapped accessible – the heating system and ventilation need to be improved (F unmarked)
-everything is falling apart (F unmarked – only comment)
-bathrooms need more ventilation – quality of air, heating, lighting and water are a big issue to the quality of life that occurs while we are in the process of educating and learning. <u>Rooms that have windows on both sides of the wall provide perfect lighting and ventilation as in S-corridor.</u> (F unmarked)
-each corridor should have small rooms for 1:1 testing. In addition to needing a new roof, we need a new heating, air filtration system, windows, ceilings – we live in the country – Williamstown is an educationally challenging area – our students should know about it (F staff – S.Broch)
-The library has too many exits (leading to missing materials) not enough windows giving it a basement feel, too many blind spots and the heating system is a joke. I can't imagine what is living under what is left of the carpet but we get many complaints about sinus infections. (F unmarked – K.Share)

Interviews:

David Livernois – Physical Education Faculty Member (April 19, 2005)

-Stressed disrepair of girls' locker room (floor space limited, need for showers, currently use as storage space, hoped for team locker rooms)
-Lack of public restrooms that do not infringe on the students in the lockerrooms
-Disrepair and uselessness of 'cold corridor' -only handicapped access to gym is through girls' locker room
-Inability of school to do a 'lock-down' right now if one was necessary to secure the school
-inefficient heating (extremes of cold and hot too often occur)
-athletic fields in pretty good shape, need better drainage of practice field, overused
-dream addition: climbing wall, high and low ropes course – hole in curriculum

-drinking fountains only located in locker rooms, need easier access once water problem gets fixed
-what's changed over the last 35 years: comradery of faculty lacking, need centralized gathering area, would be able to be more aware of particular students if more communication between departments
-need for a better maintenance plan for school
-lack of security of stuff within locker rooms during classes, no way to lock up lockers or room
-highlights how nice it is of Sweetwood to allow students to use woods for class and cross-country trails

Dr. Mark Piechota – Superintendent (May 5, 2005)
-vision if new construction: Two wings of building w/ shared area dividing middle and high school (kitchen, cafeteria, library, electives in the middle) - allow for middle school and high school to identify themselves separately
-current space that needs improvement: front area of auditorium tight area – walls could be moved out 15 ft
-current flat roofs are not designed for New England winters – two story building could save on heating
-environmental concerns: air quality, ideal location for solar power and wind energy (possible incorporation of educational value if school provided its own technology with interactive grid in hallways illuminating current use of energy)
-windowless rooms are worst space in school; library is pretty pleasant as best space, along with classrooms that have views of the hills
-need parking lot to be visible to administration
-although school constructed for over 1380 students, new demands on space by SPED and computer labs
-if student lounge were to be installed – need for maintenance funding as historically get trashed
-dream room in new building: a medium-sized space to bring 50 kids together to debate/presentations, circular space to facilitate interaction – help educational mission of responsible citizenship, informed skepticism and sustained interaction
-transportation: parking lot in disrepair (pot holes, drainage, frost heaves), better public transportation needed

Interview with Dr. Mark Piechota

You know we are looking at the building (renovation or reconstruction) options for MGRHS. What would you recommend(ideally) for revival?

New building – 2 wings (one middle school, one high school). In the center of the wings, a shared area for art/music facilities. Ideally middle school and high school would not interact (except in this common space).

Why would the middle school and high school ideally not interact?

Healthy to develop their own identities – important that middle schoolers do not see themselves as just a smaller version of the high school.

On the feasibility of this ideal…

"The politics of it all are yet to be seen."

What do you see as the most problematic space of the current buildling?

The lobby area – front of the auditorium. Need for a central meeting area (intermission of a play, etc.)

Aesthetically: "these flat roofs – they are not meant for New England. They're meant for California."
Ideally – 2 stories → save on heating costs.

"Air quality is number one" (priority).

What do you see as the best and worst spaces of MGRHS?

Worst Space: rooms without windows, the parking lot (should be moved away from the front of the building yet should still be visible to the administration).

Best Space: "classes at the back of the building that look straight into the hills"
-library is "pleasant" but there isn't enough in it…

In 1968 the school underwent an addition increasing its capacity to over 1300. With only 801 students today, why is there concern for lack of space?

That projection was made before special education, before computers were invented. Now we have 6 special education rooms and 4 computer rooms – "space is being used differently".

In the survey results, many teachers noted that they are spread out all over the school and would like a shared space. How would you respond to this?

(Referencing his experience as a teacher at Brookline high school): "shared spaces are used when people don't have their own classrooms"

The students also noted as their highest priority for an ideal space that they would like a student lounge or common area. How would you respond to this?
In Brookline, the student lounge only lasted for 2 years – students would trash it – you need the funds to monitor it full time.

What do you see as most lacking at MGRHS (in terms of a facility, ex: extra drop-off lane for special education children)?

Reference to the school's mission of fostering responsible citizenship in the students: a small meeting place where 50 kids at a time could get engaged in debates (learn social citizenship)….."a space for community dialog". Sees the auditorium as an inadequate space for dialog – the chairs in such a room need to be in a circle → "sustained interaction" (no escape! Forced to work out their differences).

Any final comments?

"Move that darn parking lot. The parking lot is a major problem – it's an ugly thing – the drainage, the frost heaves."

"Add some public transportation so people don't need to drive

Interviews: Ford Spalding, Libby Yon (Dover Sherborn Regional Schools)

Ford Spalding

Tell me about your project (what made it so successful?).

-included the faculty in every stage of the planning process
-raised money for the Auditorium (fund for Alan Mudge, deceased student of DS)
-convinced everyone that the schools are a <u>community resource</u>:
-"We can say it's a resource for the community, so you fund it, we'll build it."
-"This isn't just for educating kids or school kids' parents. This is for everybody."
-"The middle school was designed by the middle school faculty."
-"We tried to involve everybody, and that's the only way to get it through."
→ enabled them to take the project through 3 or 4 town meetings with unanimous support from everyone at every step of the way – only able to do this because they included everyone (*note that the

seniors were the biggest supporters – the Building Committee convinced the seniors that the schools were a community resource, that they could watch movies in the auditorium on the weekends, etc.)
-hiring of a project manager was instrumental to its success

How did you know to tear down the middle school and just renovate the high school?

-cost-benefit analysis – the middle school was constructed in 1962 and it was clearly less expensive to tear down and rebuild it rather than try to work with a poor structure. The high school was much more structurally sound because it was built in 1967 – it would have cost more to tear down and build anew.
    -for the high school they did not gut it entirely but took out all heating, electrical, plumbing → essentially looks like a brand new school from the inside
-note that funding from the Commonwealth is based on specific education issues (educational specifications)
-the state encourages new construction – won't fund a project unless it has a lifetime of 20 years

Did you look at funding for green construction?

No (no time).

How much did this project cost?

-40 million for everything – 12 million for the high school (renovated), 13 million for the middle school (reconstructed) (other for wastewater treatment plant, water tank for a fire, etc.)
-received 57% funding from the state, combined towns (Sherborn received 60%, Dover 55%)
-used Tishman Construction Co.

Libby Yon

Tell me about the process you underwent.

-state reimbursement is based on stringent requirements and reimbursement rates
-architect conducted a needs assessment → certified for grade-level classroom size, sq. footage formula, etc.
-"it didn't require community input, but it doesn't work without it"
    -"out goal was to have as many questions answered as possible" before they proposed anything to the town
    -principle of middle school regularly met with architects
-to determine needs (renovation, reconstruction, etc) they conducted engineering studies, space needs, etc (Educational Assessment Plans)
-educational specifications are very stringent – can't just say that the school is falling apart (need engineering reports to back this up)
-accredation reports – both schools were put on warning for lack of ADA compliance

What did your Building Committee look like?

-30 members (2 towns) – teachers, administrators, townspeople (even a few students in the early stages)
-Project Manager (Tishman) – "worked with the architects, the construction company, the Building Committee"…."translating the language" of each group to the others

How did you determine the needs of the community?

-Community surveys
-middle school surveys (via School Improvement Plan → what are you looking for in a new school?)
-went to the Student Council meetings

Why didn't you consider green buildling?

-cost of green systems seemed too much initially (to install these systems is more expensive)

Interviews:

John Holden:

I talked to John about the facility audit he conducted of the MGRHS in 2002, and received some updates in cost figures (the anticipated total cost of all renovations was still pretty close to 1.5 million). John noted that *replacing* the ventilating units (as opposed to rehabilitating them) would raise the cost significantly (about 300,000 dollars), but that the ventilation units do not actually need to be replaced (a fact which is questioned in the Indoor Air Quality Report). John attributed most of the problems with the ventilating units to poor maintenance, and noted that switching to a ducted ventilation system (Williamstown Elementary utilizes ducted ventilation) which would significantly lower the operating costs. This system would, however, prevent the school from ever having an air conditioning system. John commented also that much of the mold often complained about by both students and teachers and considered a source of some of MGRHS's air quality problems was cleanable, but that some of it is embedded in the sheet rock of the walls, and that there is no real way to clean it out (an argument that might be made for new construction over renovation). He also noted that the replacement of the boilers will actually raise the school's energy costs because they will have to switch to #2 oil as opposed to #4 oil, and that there was a potential environmental issue with the underground storage of the oil tanks (they are currently in the SE corner of the baseball diamond immediately next to, and possibly contaminating, one of the school's two potential waterlines). John anticipated the cost of new oil tanks to be somewhere between 20,000 and 50,000 dollars depending on the quality and make of the new tanks. When asked about the lifetime of the building, he estimated that it would last for about 10 more years if we completed all of the minor renovation tasks, but made the astute observation that it makes very little sense to put money into a building unless it is performing its designated function (working as a school, not just as a building).

As pertains to the major renovation vs. large construction question, John Holden said the figure we have for a new school building (about 200 dollars per square foot) seemed right, and said that a major renovation would probably cost somewhere between 100 and 150 dollars per square foot. This would allow us to manipulate the walls that separate classrooms, but that the school's corridor walls could not be altered as they perform a fairly significant structural role in the school building. A major renovation would not, in fact, significantly lower energy costs (he noted that replacing the windows might result in about a 20% savings, but is also a very expensive process) in the way that a new building could. He also noted that a major renovation would involve the rental and utilization of some number of portable classrooms (even if it was performed in stages) while a new building could simply be put up on a different spot on site, allowing the old building to continue functioning during construction, and that this would be a fairly significant added cost. He suggests that the building committee analyze the ways in which the building is functioning as an educational space. If the building's general structure is amenable to making all the changes demanded by teachers (so that MGRHS can continue to fulfill its educational mission), then he estimates that the cost of renovation is probably lower than that of reconstruction, but if this is not the case he recommends new construction.

Robin Leitlehner:

Robin is one of the two MGRHS teachers recently diagnosed with Sarcoidosis. She talked quite a bit about various health problems that teachers who had taught in windowless rooms at MGRHS had had as well as providing several anecdotes about teachers' experiences with the building (most notably she told me that Bob Ianitelli once opened up the vent covers from the outside and pulled out a large amount of debris including decomposing animal bodies). She expressed frustration that teachers' health problems and the IAQ problems of the school were not taken seriously (the teachers have been told repeated times that the problem is their fault for blocking vents with books, papers, furniture, etc.). She also expressed frustration that when she wanted to move out of her windowless room she was forced to move to a room in the middle school (an inconvenience for her high school students).

In terms of things she would like to see at MGRHS, her concerns were similar to the faculty we surveyed. She suggested an open computer lab that was staffed at all times so that teachers who had only one or two students who needed to do work on the computers could send those students. She similarly expressed a desire to have an open room she could send students to in order to take tests or do make up work. She also talked quite a bit about the lack of faculty workspace, commenting that a faculty workspace might help solve some of the teachers' individual problems with technology (there could be a communal printer and computer). She also mentioned that it would be nice if students were allowed to utilize the school's outdoor space, but was also understanding of the noise constraints that stop students from doing so, noting that a better planned school might better accommodate students' desires to go outside without disrupting classes.