South Central High School:
Redefining Community

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2004-2005 Senior Design Thesis

Department of Architecture and Landscape Architecture
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South Central High School:
Redefining Community

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By

Leah Armstrong

In Partial Fulfillment of the Requirements
for the Degree of
Bachelor of Architecture

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DESIGN THESIS ABSTRACT

My proposal is for the design of a new high school that would consolidate the schools of Colome, Gregory, Burke and eventually, Bonesteel-Fairfax. I am interested in designing for the rural educational philosophy. The idea that personal attention contributes directly to the student's intellectual and social growth will play a role in how the classroom sizes and layouts are addresses. I am curious to observe how the people deal with the issue of redefining their community in an area where individual town and school pride is avid and often times fierce. I see a great opportunity in this project to bring something architecturally refreshing to the communities. I hope to accomplish this by studying the familiar features and forms of the area and abstracting them in a way that creates a space that is familiar yet modern.

Project Introduction




PROJECT INTRODUCTION

GENERAL DESCRIPTION

I intend to provide an educational and athletic facility for grades 7-12 for the consolidation of Colome High School in Tripp County, Gregory High School, Burke High School and possibly Bonesteel-Fairfax High School in Gregory County.

LOCATION

Not far west of the Missouri River, Highway 18 runs through South Central South Dakota, serving as a lifeline between the small rural communities. It also connects Tripp County and Gregory County, the main districts I am dealing with in this project.

Of particular concern to me are the three towns that host the consolidating schools. Figure 2 delineates US Highway 18, which Colome, Gregory, Burke and Bonesteel-Fairfax all rest directly along. Colome is the farthest north of the three towns but is the last community within the southern border of Tripp County. Gregory lies 15 miles southeast of Colome, and Burke is eight miles southeast of Gregory. The school for Bonesteel-Fairfax (two towns that have already consolidated) is located in Bonesteel, 20 miles southwest of Burke. A few other small towns, whose schools closed long ago, or never existed, are dispersed along the highway between Colome & Bonesteel-Fairfax. These include Dallas, Herrick and St. Charles.

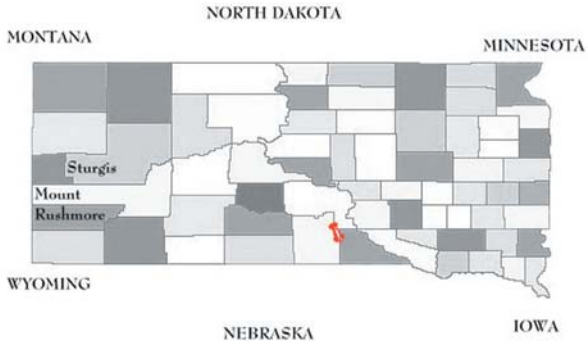


Figure 1. County map of South Dakota showing Gregory County within the state. Approximate position of Gregory is pinpointed.

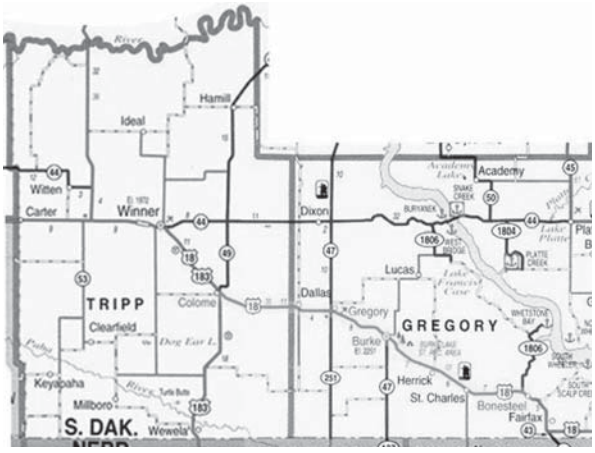


Figure 2. Map illustrating how US Highway 18 runs through Gregory County and the location of the cities along its course.




PROJECT INTRODUCTION

THEORETICAL PREMISE

The underlying theoretical premise of this project deals with maintaining the ideals of rural education that small communities have always upheld and taken such pride in. Rural schools value their ability to offer students more attention and develop close student-teacher relationships.

Overall, the facilities in Colome, Gregory, Burke and Bonesteel-Fairfax have done well to educate the students. The National Education Association (NEA) acknowledges that, "The success of rural education is linked with what makes rural and small town America unique" ("Rural Education", 2004). From personal experience, this refers to the ability of rural schools to offer students closer, more personal attention because of the size of the classes. The people who favor rural education believe that a small school will have less conflicts and dangerous situations for children than a large school. The NEA recognized that, "Smaller classes also enhance safety, discipline and order in the classroom" ("Class Size", 2004). Some may feel strongly about the moral and ethical teachings that take place in a small town atmosphere. Whatever the rationale, these are the people who directly see the benefits of educating students in an environment where they have personal interaction with the educator.

The "NEA supports a class size of 15 students…" and "The National Association of Elementary School Principals has revised its class size policy statement from a student-teacher ratio of 20 to 1 down to recommending a student-teacher ▸

THEORETICAL PREMISE*...continued*

ratio of 15 to 1" ("Class Size", 2004). Countless studies have been done on class size and how it affects the education of students. One study in particular performed in Burke County, North Carolina during the 1995-1996 academic years followed this idea of a 15 to 1 ratio. The conclusions showed improvements in skills like reading and math, and that classrooms had less disruptions due to bad behavior allowing teachers to spend more time actually teaching ("Increasing Student Achievement", n.d.).

The problems arising with schools that are the size of those in this study (all under 200 students at the high school level) relate to financing and funding programs that require a larger student base or more participation. Some class sizes fall to as low as five students which is economically undesirable for schools. Figure 3 shows how far below the desired 15 to 1 student-teacher ratio each school currently stands. A decline in enrollment is a major issue for these rural schools. The student body is already too small to justify offering certain programs. Continued decline may put the schools in a position to be incapable of supporting sports teams, academic organizations, school bands and other activities that facilitate a young individuals' growth. Many of the actual school *buildings* in South Central South Dakota are inadequate enough to support such functions whether the participation is there or not.

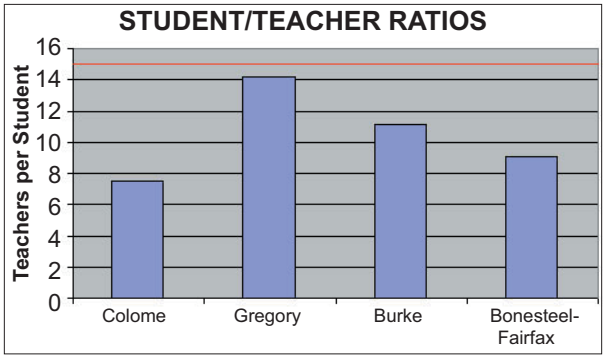


Figure 3. Recent student/teacher ratios for each school in relation to the ideal ratio of 15:1 (red line).

A new school could effectively provide for a fluctuation in enrollment, which is often experienced by rural areas, by planning for ▸




PROJECT INTRODUCTION

THEORETICAL PREMISE*...continued*

expansion and creating spaces that allow for multi-purpose activity. A 1997 article in ERIC Digest reports that researchers encourage a school size of no more than 900 and no less than 300 students (Irmsher, 1997). The advantage of consolidating the Colome, Gregory, Burke and Bonesteel-Fairfax schools is that enrollment will still not exceed 700 students. Participation will stay within the ideal range for enrollment, as the area experiences a natural decline in population as well as the desired growth once industry develops and people see opportunity for themselves and their children.

COLOME SCHOOL HISTORY

Colome's first school building was erected in 1910 for approximately $1800. Five years later the need for expansion prompted construction of a $20,000 brick schoolhouse. In 1924 and addition was built onto the school. In 1940 an auditorium was constructed, but it burned down shortly after in 1941 and a new one replaced it in 1946. Figure 4 is a photograph of how the building looked at that time. A new $750,000 gymnasium was constructed in 1993 on the site of the original school, adjacent to the current school building shown in Figure 5 (Jorgensen, Osborne, Harter, Dedlow, Zimmerman, 1983). A small portion of the new auditorium can be seen in the background to the left.

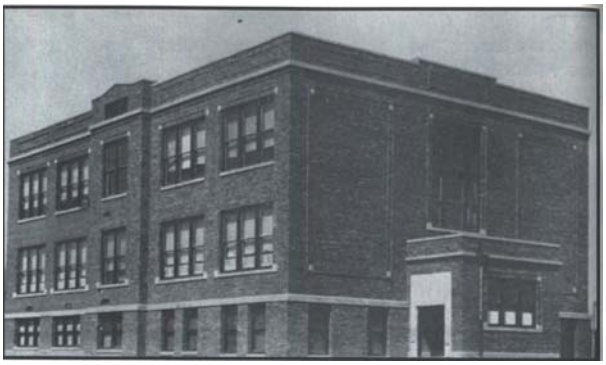


Figure 4. Colome High School in 1942.

Figure 5. Colome High School as it looks today.

PROJECT INTRODUCTION

GREGORY SCHOOL HISTORY

Gregory's first high school was founded by J.J. Flynn in 1905. It was a two room schoolhouse (Figure 6) that educated 58 students. In 1907, a new six room school was constructed. The two story building measured 48 feet by 48 feet. Students from grades one through ten were educated here. Due to the increasing number of students, during 1910-11, that building became the Catholic grade school and new elementary and high schools were constructed. The Gregory High School burned down in 1931 and by 1932 plans for a new $33,000 high school were in progress. A two story addition was built in 1957 that provided five more classrooms and a shop class space. A second addition containing a music room and a cafeteria was proposed in 1961. Around this time, the Gregory Independent School District began to acquire students from surrounding areas as the rural schools began to shut down. The most recent alteration of the school is a new gymnasium floor (Winter, n.d.). Figure 8 shows a recent photo of Gregory High School. The grade school and auditorium can be seen behind the high school. The facilities are all connected.

Figure 6. First public school building in Gregory.

Figure 7. Old Gregory high school building.

Figure 8. Gregory High School as it looks today (2004).

BURKE SCHOOL HISTORY

Figure 9 represents one of the first school buildings in Burke. The wood frame school house had only two classrooms. Burke's first brick school building is illustrated in Figure 10. The existing high school is shown in Figure 11. The gymnasium building connected to the high school which is slightly shown on the left in Figure 11.

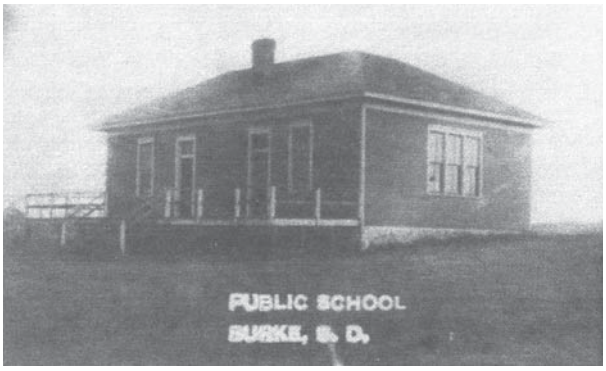


Figure 9. New two-room frame school building.


Figure 10. New brick school building.


Figure 11. Burke High School as it looks today (2004).

PROJECT INTRODUCTION

Bonesteel's first school building, shown in Figure 12, was constructed in 1893 near the railroad tracks. The materials were courtesy of Henry E. Bonesteel. Each student paid $1 a month in tuition to attend the school. The building was used for other functions such as dances, Sunday School, and church sessions (Gregory County Historical Society, 1980). Figure 13 illustrates the brick building that replaced a frame school building in Bonesteel.

Figure 14 is a picture of the first schoolhouse for Fairfax, SD. Figure 15 is the third school for Fairfax. This building was destroyed by fire.

The towns of Bonesteel and Fairfax have since merged and within the past two years the school district has constructed a new school (Figure 16) with Federal Impact Aid money received from the government in support of their large Native American population.

Figure 12. First schoolhouse, Bonesteel, 1893.

Figure 13. Third school building, Bonesteel, 1920

Figure 14. First school, Fairfax.

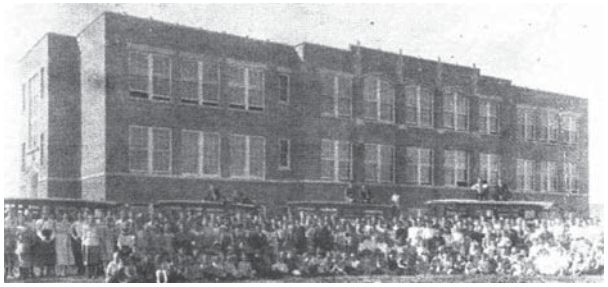
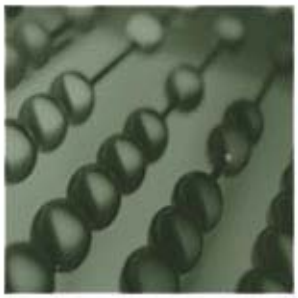


Figure 15. Fairfax's third school building, 1920, was ruined by fire

Figure 16. Bonesteel-Fairfax High school still partially under construction.






Project Description




PROJECT DESCRIPTION

CONCEPTUAL UNDERPINNINGS

South Central South Dakota does not entirely exemplify the typical conception of the Midwest's flat, unchanging Prairie landscape. The smooth rolling plains occasionally interrupted by bold buttes are instead, nature's foreshadow of the Badlands and, in an oxymoronic fashion, subtly dramatic. The design for a school for South Central South Dakota will be influenced largely by conceptual study of the symbols of this landscape. Integrating the design with concepts characteristic of the area will aid in the acceptance of the building by the people and the landscape. Surrounding features can contribute not only to the shape of the building, but also to material choices for both interior spaces and the exterior façade.

It is also important that the design be responsive to the particular site I have chosen. Characteristics of the shape and topography of the site could have an influence on design strategies employed. Conceptual study of the landscape and its proponents will also influence form and material choice.

Growing up in this area has given me a special interest in the people and the landscape. Things that were so familiar to me when I attended high school there are now having an affect on the way I look at the communities; things like the competitive spirit of the people and the strong belief in a rural way of life. I want to feel free to let my own personal experiences and knowledge of the area show through in my design.

MAJOR PROJECT ELEMENTS

Circulation is crucial in the design of educational facilities. Schools often have heavy traffic through main circulation spaces at several specific intervals during the day. Design of the circulation to enhance the efficiency and organization of this traffic flow is crucial. The need for a controlled circulation pattern can affect the layout of the spaces and ultimately determine the form of the building.

The range of spaces required in the design of an educational facility allows me to study both large and small scale spaces. Sometimes more important than the individual spaces is how they relate to one another. Again, circulation plays a role in moving people through spaces of varying size and atmosphere. I would like to explore the transition that takes place as one shifts from a large, active space like a commons area into a quiet, learning space like a classroom or vice versa. The following list of the general project elements illustrates the spatial diversity.

Main Entry/Commons
Administrative Offices
Faculty Offices
Classrooms
- •Lecture
- •Science/Art/Music
- •Technology Education
- •Computer Labs

Library
Athletic Facility
- •Lobby
- •Locker Rooms
- •Pool/Gymnasium




PROJECT DESCRIPTION

CLIENT

The client for this design project is the school boards of the consolidating districts, Colome, Gregory and Burke. I also hope to respond to input offered by community members, administrators, educators and students of each community. Through research I have conducted and my own personal experience, I have come to understand the value that administrators and educators put on the type of experience that they can offer students through the concept of rural education. They benefit as much as the students from building personal relationships.

Many community members feel strongly about the education of their young people. Smaller class sizes allow the teacher to respond to all of the students. This could prevent students who struggle from "falling through the cracks" when their individual needs are not met. In turn, they may be more likely to finish school and graduate and offer something back to the community.

USER GROUP ONE

The first user group includes administration, faculty and staff. Faculty will primarily occupy the facility during regular schools hours, approximately 7:00am to 4:00pm, or slightly before or after these hours in some cases. Administration personnel and staff will also occupy the space during school hours, but for spaces such as the library, computer labs and athletic facility, some employees may support other hours to encourage community use.

- School Board – Members Representing Colome, Gregory, and Burke
- Superindendent
- Principal
- Vice Principal
- 3 Office Receptionists
- Business Manager
- Assistant Business Manager
- Athletic Director
- Approximately 40 Faculty
- 2 Special Education Teachers
- 2 Maintenance Supervisors
- Technical Support Manager
- Guidance Counselor
- Librarian
- 4-6 Food Service Providers
- 8-10 Athletic Coaches



PROJECT DESCRIPTION

USER GROUP TWO

The second user group consists of the students, grades 7-12 from Colome, Gregory, Burke and Bonesteel-Fairfax. The students would primarily use the spaces during school hours except for spaces like the athletic facility which could function all hours of the day, weekdays and weekends. My resources indicate that each school will currently be contributing the following numbers of students (School Tree, 2000-2004):

- 90 students from Colome
- 284 from Gregory
- 184 from Burke

Bonesteel-Fairfax school currently receives Federal Impact Aid from the government because of the high percentage of Native American students in attendance. Should they consolidate, this percentage would decrease dramatically so it would not be beneficial for them to do so at this point. Superintendent of Bonesteel-Fairfax school, Jess Toliver (personal communication, October 1, 2004), informed me that if Colome, Gregory and Burke were to consolidate it may be possible to "tuition" Bonesteel-Fairfax students at the new school. This would essentially consist of Bonesteel-Fairfax paying to educate their students at the new facility in classes where they do not have enough participation to justify funding. In this case, they would not formally be a part of the consolidation and could perhaps continue to receive Federal aid. If the government would cease to provide this aid, the school would have no choice but to consolidate their 100 students. Based on this information, I am allowing for half of Bonesteel-Fairfax's enrollment (50 students), maintaining the idea that ▸

USER GROUP TWO*...continued*

the facility I am designing should support growth and expansion and therefore can be ready for Bonesteel-Fairfax to fully consolidate when they are. I will include some research for Bonesteel-Fairfax, and only a portion of their statistics will affect any calculations I use for planning.

Space planning and other calculations will be based on a total of 608 students. Since all of the towns are currently seeing a decrease in population, the facility should respond to a five percent decrease to 578 students but also to an increase to 638 students.




USER GROUP THREE

The third user group involves the public. Unlike the others, group three would use the spaces more during after school hours, evenings and weekends. Events such as parent-teacher conferences, community meeting, athletic events, and the like would encourage this group to make use of the resources the school has to offer. Below is a list of possible users.

- Parents
- Community Members
- Guest Speakers
- Substitute Teachers
- Visitors
- Visiting Athletic Teams
- Fans and Spectators

DESIGN APPROACH

Through interviews and research about educational philosophies I have found a great deal of information that will foster good design.

The interviews with the superintendents of the schools gave me a better understanding of the current situation of the schools. The superintendent of Burke High School, Jack Broome (personal communication, October 1, 2004) informed me that Burke is already sharing some activities with Bonesteel-Fairfax. For example, they have joined bands because alone they do not have enough participation for a marching band and soon the athletes from the two schools will combine to form a football team. Such knowledge about the individual communities and schools will help me better understand where current programs are lacking or succeeding. Ultimately making the design more sensitive to the clients needs.

Many relationships exist within a school. The correlation between public versus private spaces, student versus faculty/administrator spaces and dynamic learning spaces versus static learning spaces can affect the form of the building. Spatial relationships are very important in school design and various methods such as an interaction net and other types of diagrams will help make these relationships clear.

During the design process it will be important to employ concepts learned through case studies to generate a design appropriate for the typology and the region.




PROJECT DESCRIPTION

EMPHASIS, GOALS & OBJECTIVES

The emphasis of this design project involves a couple different aspects. First, as mentioned before, I hope to address the issue of circulation and the relation of large scale to small scale spaces. Second, the fluctuation in population is something I hope to accommodate by creating a building that is open to expansion. This project is not intended to be a solution to the problem of declining population in the area, but rather encourage and support any growth the community may experience. The school should be viewed as an amenity that can contribute to the prosperity, vitality, and education of the entire community, not just the students.

As an underlying premise, the parties involved in consolidation will have to consider redefining what they regard as their community. Instead of three or four small communities separated by miles of prairie, citizens will support one wide spread community connected by the highway and the school.

School consolidation is a widely discussed issue. There are many reasons for this, one of the main ones being the affect it has on the communities that lose schools as well as the ones that gain them. The loss of a school due to consolidation often has a greater affect on small rural communities because of the unity that exists among the people living there. More importantly, "Rural communities depend on their schools to serve many functions beyond their primary mission of educating children. Rural school districts are often the largest single employer in their area and rural schools ▸

EMPHASIS, GOALS & OBJECTIVES*...continued*

serve as the social, recreational and cultural foundation of their communities" ("Rural Education", 2004). Losing such an important resource could sacrifice the livelihood of the town.

Alan Armstrong, Colome High School CEO (personal communication, October 3, 2004), described some of the apprehensions the citizens of Colome have expressed about consolidation. Many people turn their back to talk of consolidation hoping that the idea will go away. There is concern that if the high school closes, much of the business in town would suffer, for example, the grocery store, where people stop "as long as they're in town" on the way to school functions, or the café which is utilized by upperclassmen during their lunch break. Many argue that there is no need for consolidation because the schools are presently financially stable. It is important to emphasize that one of the goals of this project is to *ensure* the success of the South Central South Dakota school district and provide a facility to *better* educate students.

Site Analysis




SITE ANALYSIS

REGION, CITY, SITE

Gregory County and the city of Gregory were "named for John Shaw Gregory, territorial legislator and Indian agent" (ePodunk, 2005). Gregory County was originally platted in approximately 1860. It disappeared and it was almost 30 years later when it finally resurfaced. Indian tribes like the Sioux who once occupied the land had been pushed to reservations such as Rosebud, Pine Ridge, and Standing Rock. "Gregory County was part of the 'Last Frontier' opened to settlers" on May 15, 1904. On August 8 of that same year, Gregory became a town-site ("City History", n.d.).

By 1906, Gregory was occupied by 500 people and had an impressive 250 buildings. The addition of the railroad tracks gave promise to the town. Before long, "fifteen regular trains arrived in Gregory daily, packed with passengers" ("City History", n.d.). Gregory celebrated it's centennial anniversary in 2004.

Gregory is located near longitude 99.43W, latitude 43.232N and at an approximate altitude of 1896 feet (ePodunk, 2005).

SIGNIFICANCE OF SITE

Site selection was extremely important for this project. One of the primary decisions was whether to locate the building in the geographical center between Colome and Bonesteel-Fairfax (which would be approximately two miles northwest of Burke in the middle of the open prairie) or directly within one of the towns. I rationalized that it would be better to pick a site within one of the communities and allow at least one town to prosper rather that locating the building on a remote site where all the communities might suffer and all users would be forced to commute. Though high schools play a vital role in rural communities, I do believe that the towns that lose schools could resource such amenities as hospitals, elementary schools and industrial facilities that would allow them to prosper at an equal or greater rate. Another important reason to develop the school within city limits is "…collaboration with organizations and agencies outside the school" (Irmsher, 1997). The community-school relationship is equally important to both parties. The school provides numerous resources to the public from access to technology to recreation and entertainment. In turn, the community provides a great deal of financial and academic support for the students.

I then chose Gregory as the town because of the four; the school there is the most dilapidated and out of date. The existing school is nearer the center of town, however, the supporting amenities like the football field, track and gymnasium are all on the outskirts. This observation helped me determine a specific site, ▸




SITE ANALYSIS

SIGNIFICANCE OF SITE*...continued*

which is locatedless than two blocks south of the football field. The grouping of all of the sporting facilities would be convenient for all the student athletes, coaches, and fans. Furthermore, the site is easily located and accessed through major transportation linkages, making commuting more feasible and convenient.

ECONOMIC BASE

Not surprisingly, South Central South Dakota's largest economic base is Agriculture. The main crops for this base include wheat, corn, milo, soybeans, sunflowers and hay ("Tripp County", n.d.).

Figure 17 shows some of the most planted and harvested crops for Gregory County as of 2001 ("MapStats", 2004). Corn and oats each had a yield of about 82.5 bushels per acre, soybeans had 29.1 bushels and wheat had 30.7 bushels.

The area also has a large livestock base. Beef cattle rank highest in this division. "Raising hogs and pigs is generally South Dakota's second largest livestock enterprise" (Diersen, 2001).

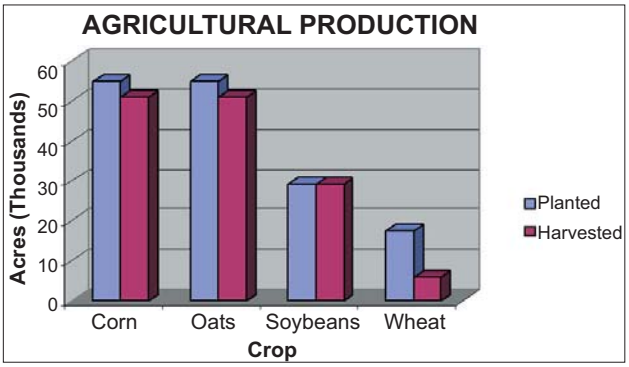


Figure 17. Yields for the different crops harvested in the Gregory County area.

SITE ANALYSIS

DEMOGRAPHICS

Figure 18 illustrates the overwhelming white demographic for each of the consolidating schools according to a database listing information regarding over 90,000 schools. The chart makes the ethnic trend obvious. Well over 90% of the students from each of Colome, Gregory and Burke are white. The chart also clearly illustrates the nearly 30% Native American population for which Bonesteel-Fairfax receives government assistance and therefore cannot economically consolidate at present.

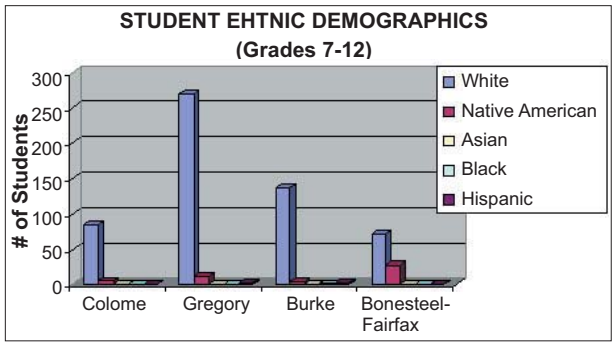


Figure 18. Graph of different ethnicities among students in Gregory and Tripp Counties.

Figure 19 depicts the large number of people of age 60 and older compared to high school age children based on total populations of Colome (340), Gregory (1,342), Burke (676) and Bonesteel-Fairfax (420) as of 2000. These numbers are good reasoning for overall decreases in populations. From 2000 to 2002, Colome dropped in numbers by 2.9%, Gregory by 7.4%, Burke by 5.9% and Bonesteel-Fairfax by approximately 5.7% (http://www.city-data.com). The ratio of males to females in each of the school systems is relatively close as presented by Figure 20.

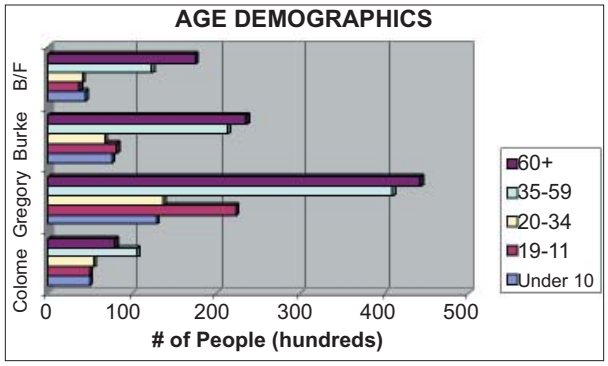


Figure 19. Graph of age ranges within each town.

Though the population is decreasing for the time being, education is still important. Over seventy-five percent of the population that is 25 years and older in Colome, Gregory and Burke has a high school education or better. Bonesteel-Fairfax is only slightly below that with around 73% (http://www.city-data.com). In my mind, this only amplifies the need to continue providing excellent education by expanding and modifying educational facilities.

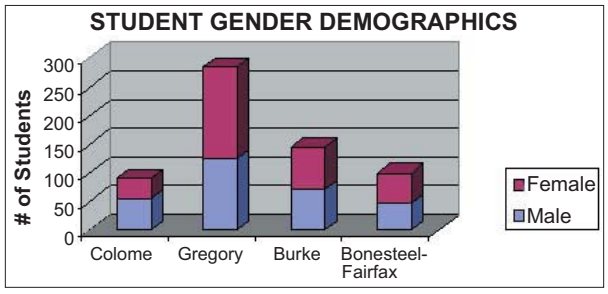


Figure 20. Current male to female ratio within each school.

ENVIRONMENTAL ISSUES

Major environmental issues that exist for the site include wind, snow and tornadoes. Occasionally tornadoes can be a concern for South Dakota, but Gregory County has only seen 15 tornadoes in the last 53 years, one of the most recent occurring in 1993 ("South Dakota Tornadoes", 1999). Gregory County has had its share of earthquakes as well as indicated by Figure 21 (South Dakota Department of Environment and Natural Resources., 2004).

The wind across the open prairie can create quite a large force. During the winter, snowfall is an issue and can be quite intense. Since the site is in the southern part of the state, the climate is a bit milder, but consideration should be made even for periods of heavy snowfall. Figure 22 shows weather information for Gregory, South Dakota in 2003. The data illustrates the temperature ranges and snowfall throughout the year ("South Dakota Climate and Weather", n.d.).

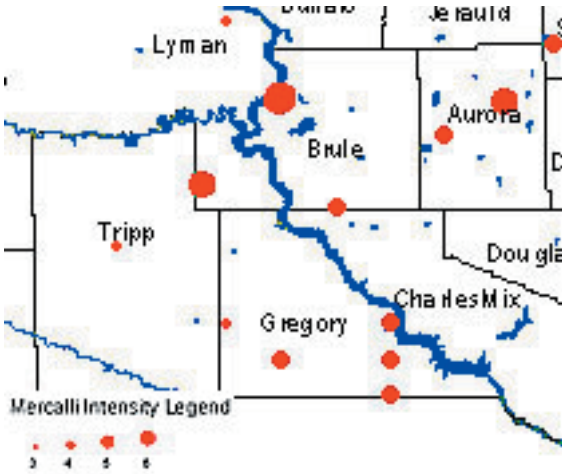


Figure 21. Location map of earthquakes in Gregory with intensity represented by the red dots.

Element	Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
393452 :: GREGORY (Climate Division: 8)													
TOTAL MONTHLY PRECIPITATION	2003	0.61	0.38	0.59	3.03	5.24	4.33	1.16	3.46	0.98	1.28	0.41	0.68
DEPART-NORM. MONT. TEMP	2003	3.4	-3.5	-0.4	2.6	-0.8	-1.9	1.5	4.2	0.9	5.5	-0.3	7.9
EXTREME-MIN TEMP	2003	-19	-12	-3	6	32	43	52	52	31	19	-7	8
EXTREME-MAX TEMP	2003	63	61	81	89	85	90	108	102	97	90	69	64
MAX SNOW DEPTH	2003	6	2	0	0	0	0	0	0	0	0	7	4
TOTAL SNOWFALL	2003	8.3	0	3	9	0	0	0	0	0	0	0	0

Figure 22. Yearly weather data for Gregory, SD (2003).




SITE ANALYSIS

SITE AREA

The site consists of a strip of land parallel and adjacent to State Highway 47, which runs in a north/south direction. This strip of land begins 1614.3 feet from the intersection of State Highway 47 and US Highway 18. The boundry line runs west 500 feet, north 992.9 feet, east 500 feet and south tot he point of beginning. The site comprises 496,450 square feet or approximately 11.4 acres.

SPECIFIC LOCATION

The site is located in the town of Gregory, South Dakota, 1614 feet from US Highway 18. It is bordered by State Highway 47 (locally known as Park Avenue) and a residential district to the east, Gregory Healthcare lies to the south, a small housing development to the north and prairie extends west of the site. These surrounding areas are shown in Figure 23 and the general area of the site is highlighted in red.

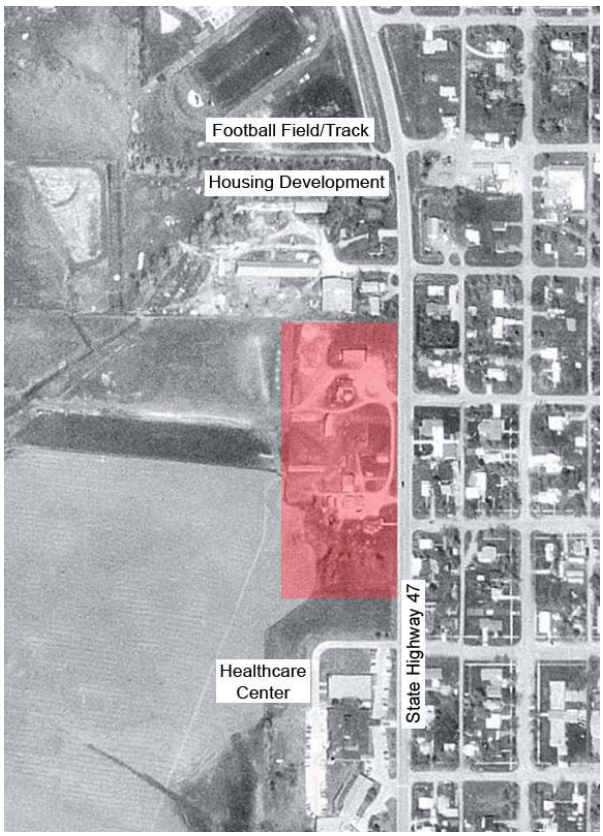


Figure 23. Aerial map of the site and surrounding areas.

AREA LANDMARKS

The Missouri River flows through South Dakota less than a one hour drive from Gregory. The river offers the people of South Central South Dakota a quick getaway for some rest and relaxation. Figure 24 is a picture of Missouri River activities near Snake Creek Recreation Area.

Figure 24. People enjoy swimming and other water activities on the Missouri River.

SITE TOPOGRAPHY

The topography of this region is interesting because while most of the area is characteristic of the flat prairie of the Great Plains, South Central South Dakota shows traces of the buttes of the Badlands.

Each topography line on the map (Figure 25) represents a ten foot change in elevation.

Surrounding the site are a few dramatic examples of these buttes (the topography of the butte near the site can be seen in the upper right corner of Figure 25). The site itself has a moderate amount of topography exhibiting approximately 30 feet of elevation change across some portions.

Figure 25. Topography map of site location. The main roads, shown in red, represent Highway 18 and Highway 47.

SOILS & VEGETATION

Figure 26 shows the division of soil types existing on and around the site. The site is comprised of Reliance silty clay loam (ReB) with three to six percent slopes and Mosher-Jerauld silt loams. The Reliance soil is deep and well drained and irregular in shape.

Mosher-Jerauld (Ms) soils are deep and moderately well drained and also irregular in shape. They often occur near Reliance soils as is the case with this site (Department of Agriculture, 1984).

The vegetation most suited to the site based on the soils includes blue grama, western wheatgrass, buffalograss, saltgrass and sedges. A nice grove of deciduous trees grows to the north of the site.

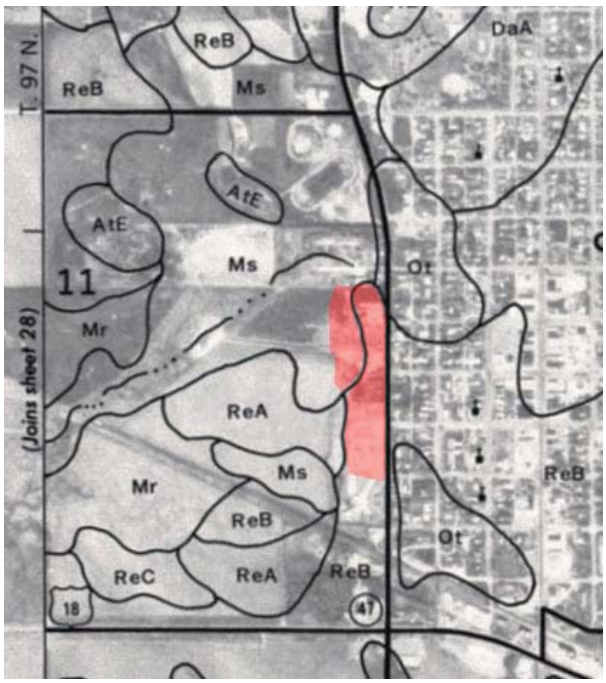


Figure 26. Soils map for site location (site highlighted in red).

GEOLOGY

The map (Figure 27) is color coded to highlight the different geological areas of South Dakota. The yellow represents tertiary material (silt, sandstone, clay)

"Erosion continued to be the dominant force as Tertiary rock history began. By Early Oligocene time, stream gradients were so reduced that the streams could no longer carry away their erosion products, and deposition started on the plains adjacent to the Black Hills. Gradually, the lower two-thirds of the Black Hills became buried by light-colored clays and sands, derived not only locally, but from mountain areas to the west. Volcanic activity, probably near Yellowstone Park, contributed large volumes of windblown volcanic ash to the sediments. By the end of Oligocene time, it is possible that the Black Hills projected less than 2,000 feet above this apron of sediments" (South Dakota Department of Environment and Natural Resources, 2004).

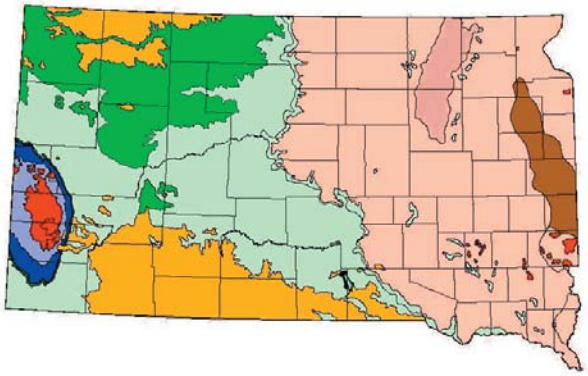


Figure 27. Map of South Dakota's diverse geology.

TRANSPORTATION LINKAGES

Currently US Highway 18 and State Highway 47 are the only major transportation links to the site. As shown in Figure 28, Highway 18 runs directly west to east at the point it intersects with Highway 47 which follows a north/south path. At one time, however, the Chicago & North Western Railroad (Figure 29) ran from the northwest in just south of the site. The presence of the railroad was important because it greatly influenced the path of US Highway 18 that now connects all the towns in place of the railroad.

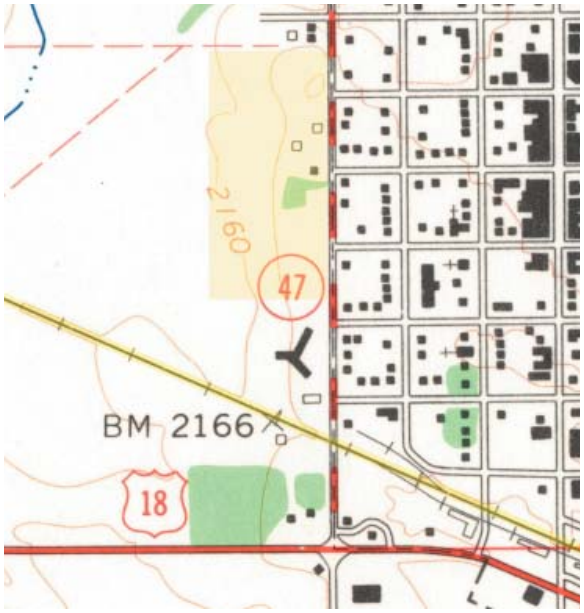


Figure 28. Map of relationship of US Highway 18, State Highway 47 and former path of C&NW RR to site

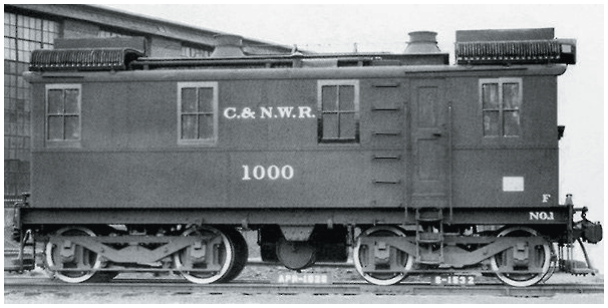


Figure 29. Chicago & North Western Railroad boxcar.

VIEWS

A range of views are available from this site which is one of the characteristics that enhances the quality of the site. The elevation of the site compared with the immediate surroundings provides some wonderful views in each direction. To the north, just beyond a grove of trees is the football field and track (Figure 30). Figure 31 is a picture of the buttes that overlooks the site. The city has also designed a scenic overlook and memorial wall on top of the buttes. To the south is the Avera Gregory Healthcare Center, shown in Figure 32. To the west is a wide open view of the prairie (Figure 33). In contrast to that, facing east on the site looks directly into a residential portion of town. The design will have the responsibility of responding to both natural and built features.

Figure 31. Gregory buttes, on top of which rest the watertower and the memorial wall and scenic overlook.

Figure 32. South east view of Avera Gregory Healthcare Center.

Figure 30. The Gregory High School football field, track and softball fields are located just north of the site.

Figure 33. Photo of expansive view of the prairie surrounding the site.

SITE ANALYSIS

SOLAR ORIENTATION

Figures 34 and 35 represent the path and position of the sun at various times of the day throughout the year. I used 44 degrees Latitude because it is close to that of the site, 43.232N Latitude.

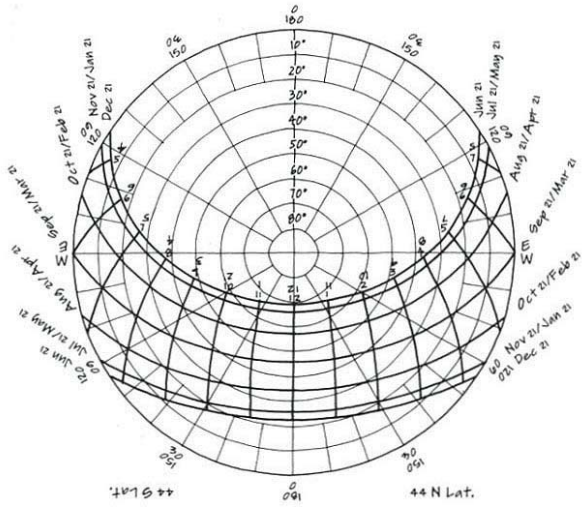


Figure 34. Sun Path Diagram for 44 degrees Latitude.

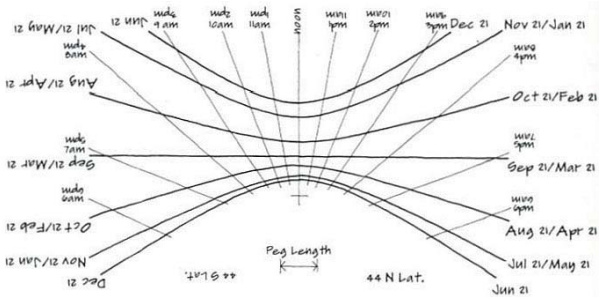


Figure 35. Sundial for 44 degrees Latitude.

PREVAILING WIND ANALYSIS

As illustrated by Figures 36 and 37, the wind blows largely from the northwest during the winter months and from the southeast during the summer months.

The average wind speed for December is 5.54 m/s. For June, the average wind speed was 5.22 m/s

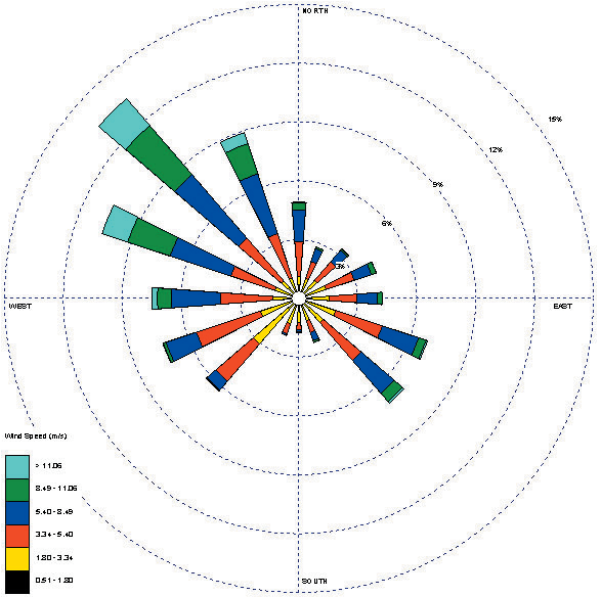


Figure 36. Wind speed diagram for December 1 through December 31.

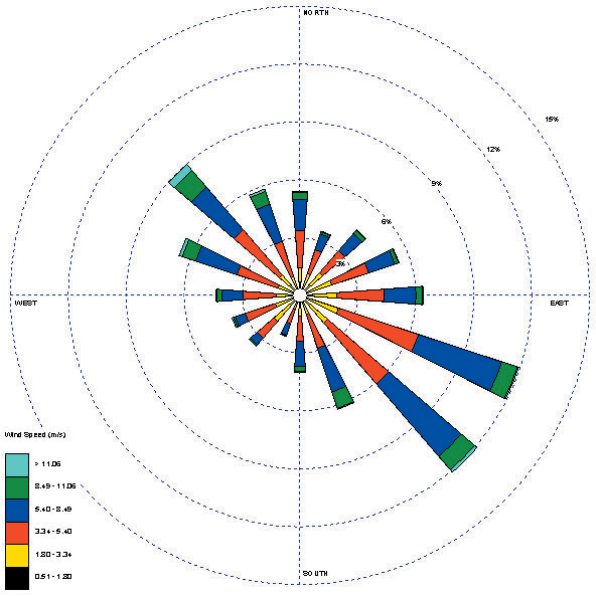


Figure 37. Wind speed diagram for June 1 through June 30

EXISTING STRUCTURES

Structures directly on the site include a small farm house (Figure 38) and a couple other storage buildings (Figures 39 and 40). To the south are two one-story buildings-Avera Gregory Healthcare Center and Avera Rosebud Country Care Center (Figures 41 and 42). The view to the east toward town consists of residential buildings. There are no main features that obstruct views from the site.

Figure 38. Existing farmhouse on site.

Figure 39. Existing storage buildings on site.

Figure 40. Existing storage buildings on site.

Figure 41. Avera Gregory Healthcare Center main entrance.

Figure 42. Avera Rosebud Country Care Center.

ACOUSTIC ENVIRONMENT

The close proximity of the site to two major highways could cause unwanted acoustic distractions. I believe Highway 18 is far enough away to not be a distraction. Because of the rural location of the town and site, Highway 47, even though it is a major transportation route, is not heavily trafficked enough to cause any major noise issues. However, some effort should be made to buffer the private, quiet spaces from too many visual and acoustic disturbances.




SITE ANALYSIS

The site I have chosen is currently zoned as Agricultural Districts (AG). However, according to Section 507, conditional use 37, the Board of Adjustments may permit the use of AG zoned land for schools (Planning and Development, 2000).

Case Studies




CASE STUDIES

CUMMINS ENGINE FOUNDATION

The city of Columbus, Indiana as a whole provides a fascinating case study because of the high concentration of schools designed by notable architects. The community has taken an active role in the design of its schools and the education of its children.

"In 1991, the American Institute of Architects proved Columbus' architectural superiority by ranking it sixth among U.S. cities in architectural quality and design. Of the institute's 829 members, only Chicago, New York, Washington, San Francisco and Boston were ranked higher" (Smith, 2003). Columbus, Indiana boasts the work of such firms and architects as Caudill Rowlett Scott, Mitchell Giurgola Architects, Harry Weese and Associates, Eliot Noyes Associates, Edward Larrabee Barnes, and Richard Meier. And that is just school construction!

J. Irwin Miller, the founder of the Cummins Engine Foundation has made a great deal of design possible by paying the architectural fees for school projects. In the 1950's, Miller's foundation offered to "pay the architectural fees for the next school if the board chose an architect from a list furnished by the foundation" (Nesmith, 1992). In 1957, the Lillian C. Schmitt Elementary School was completed by Harry Weese & Associates. In 1961, Weese was again chosen to design a school for Columbus, Northside Middle School. The Cummins Engine Foundation then funded the fees for the 1992 renovation and expansion of the two schools. These are just some of the contributions the Cummins Foundation has made to educational facilities in Columbus, Indiana. Following are a few case studies of schools in Columbus.

BARTHOLOMEW CONSOLIDATED SCHOOL CORPORATION

An organization called the Bartholomew Consolidated School Corporation (BCSC) has concentrated its efforts on improving the quality of education for students. "BCSC has adopted a national, research-based set of 'best practices' that has been proven to improve student achievement" ("Building Our Schools", 2001). These improvements are based on the idea of preventing over enrollment or under enrollment in schools in order to maintain class sizes that will most successfully and economically educate children. BCSC is currently funding $150 million dollars of new construction, renovation and expansion to realize these goals (Maschino, 2001). The original plan developed listed several schools in need of renovations or new construction including Central Middle School, Northside Middle School, Southside Elementary and Lincoln Elementary School (Figures 43-46). The Bartholomew Consolidated School Corporation web site contains a great deal more information regarding timelines, cost estimations and affect on taxpayers (http://www.bcsc.k12.in.us/index.htm).

BCSC views this program as an ongoing process and looks to renovate Columbus North High School within the next ten years (Maschino, 2001).

Figure 43. Model of Southside Middle School.

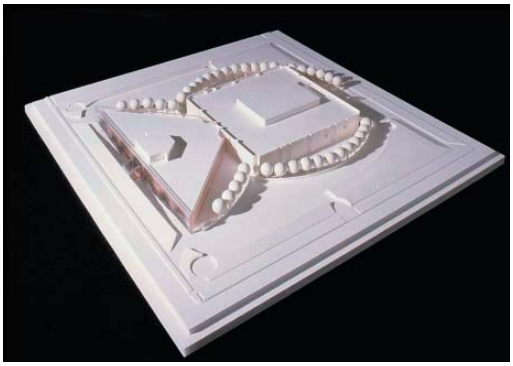


Figure 44. Model of Lincoln Elementary School.

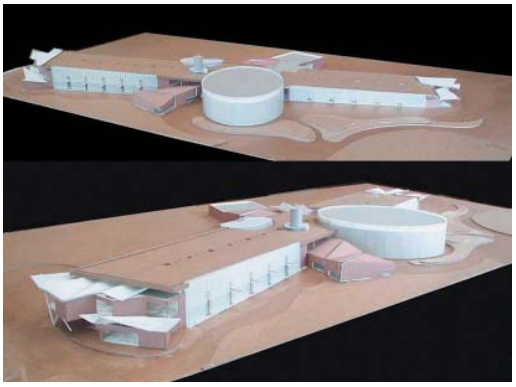


Figure 45. Model of Southside Elementary School.

Figure 46. Model of Central Middle School.

CASE STUDIES

LILLIAN C. SCHMITT ELEMENTARY SCHOOL

Location: Columbus, Indiana, part of BCSC
Architect: Harry Weese & Associates
Year: 1957
31,500 Square Feet
250 Students
Renovation/Addition: 1992
Architect: Leers, Weinzapfel Associates
53,000 Square Foot Addition
650 Students
Cost: $8.6 million

The plan, Figure 47, and site plan, Figure 48, illustrate how Weese designed the original Schmitt School with a linear concept. The central chord runs along an east-west path with classrooms and major function spaces directly off the corridor.

A successful aspect of the design is the "child-oriented scale", Figure 49. The low-rise, gabled features are indicative of school construction in the Midwest during the 1950s. The repetitive character of the classrooms organizes the building in such a way that spaces are easily found and accessed.

When Leers, Weinzapfel designed the addition to Schmitt, they contrasted the glue-lam and brick structure with steel framing and concrete block. The original gabled design was contrasted with a more modern "Miesian" inspired flat roof design. The principal central chord concept is still evident. However, a parallel corridor was created when the addition was designed, shifting the main entrance to the west courtyard allowing the students to enter directly into the main traffic flow patterns (Nesmith, 1992).

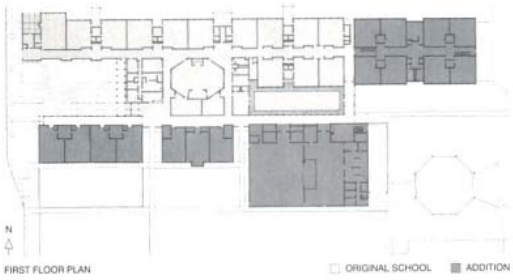


Figure 47. Floor plans emphasizing linear central corridor.

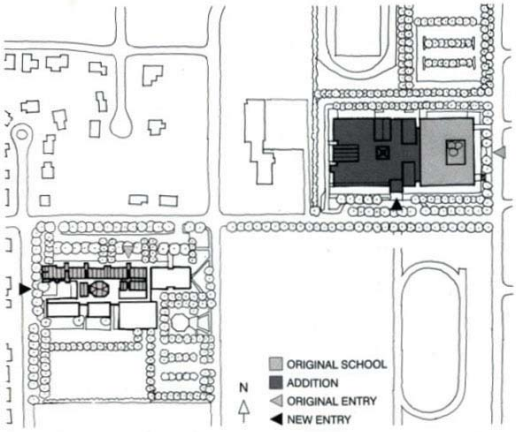


Figure 48. Site plan showing both Lillian C. Schmitt and Northside schools.

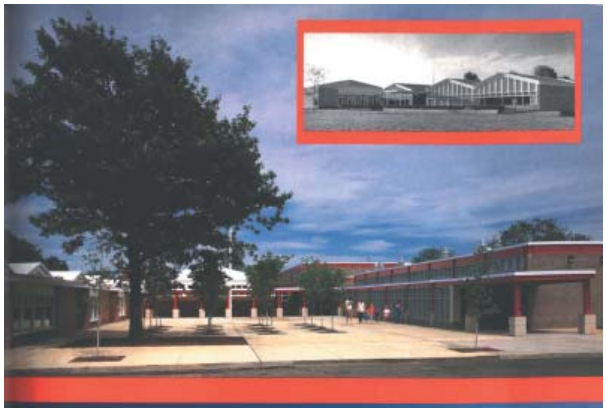


Figure 49. Perspectives show how the building is scaled to children.

NORTHSIDE MIDDLE SCHOOL

Location: Columbus, Indiana, part of BCSC
Architect: Harry Weese & Associates
Year: 1961
900 Students
Renovation/Addition: 1992
Architect: Leers, Weinzapfel Associates
83,000 Square Foot Addition
Cost: $14.8 million

Northside School has little in common with Schmitt School even though they share an architect and essentially a backyard. As seen in the plan, Figure 50, the layout is based on a central courtyard instead of a linear spine. It does, however, share characteristics of modularity and repetition.

Leers, Weinzapfel were again able to reflect upon the organizational pattern in the addition. The addition is also centrally organized and the two are connected by a corridor running north-south. The new form matches the mass and bulk of Weese's original design. I think the change to a larger scale from Schmitt to Northside is appropriate as it suggests to me a more mature design for a more mature student.

The double barrel vaults are an excellent example of utilization of familiar Midwestern forms. A very successful aspect of the design, again, is the reorganization of the entry. In this case it is the large scale portico that gives the design an importance and adds a formal touch. It announces the entrance, and the steps provide a place for students to gather (Nesmith, 1992).

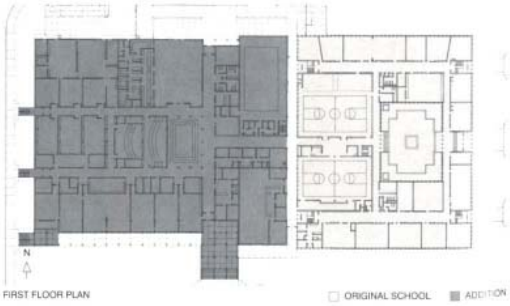


Figure 50. Plan illustrating central courtyard design.

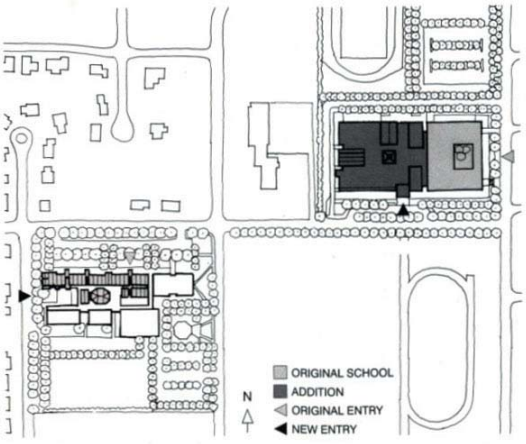


Figure 51. Site plan between Schmitt and Northside Schools.

Figure 52. Perspective of entrance to Northside.

CASE STUDIES

L. F. SMITH ELEMENTARY SCHOOL

Location: Columbus, Indiana, part of BCSC
Year: 1961
Architect: John M. Johansen
50,000 Square Feet
Cost: $1,325,416

As another success of the Bartholomew Consolidated School Corporation, L. Francis Smith Elementary School is one of the more unique designs. The project shares some characteristics with mine that makes it a great case study. The site is located in the Midwest as well and Johansen had to take into consideration many of the same things that I did as far as topography and existing characteristics. The most eye-catching quality of the design is the additive nature of the spaces. As seen in Figure 53, this technique very clearly illustrates that there are many different functions taking place and instead of grouping them all under one roof, Johansen takes care to identify each with the use of different materials and shapes. The use of concrete as a main material is very successful in that it grounds the spaces and is, I feel, a great material for the Midwest setting. It can be left exposed and appears much more natural than some other building materials. The contrast against the concrete makes the colorful steel components "pop" that much more, as see in Figure 54. The different levels, which is explained best by the floor plans in Figure 55, give the design a very active feel that is almost "jungle gym-like" and perfect for the user.

Figure 53. The different spaces are defined by both material and shape.

Figure 54. The bright colors of the steel corridors are accentuated further in contrast to the natural color of the concrete.

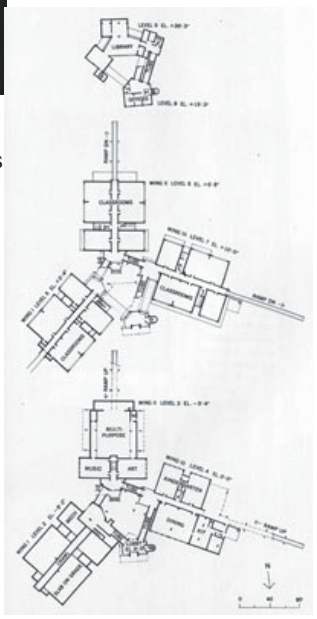


Figure 55. The floor plans more clearly explain the seemingly complicated layout of the multi-level design.

MUMMERS THEATRE

Location: Oklahoma City, Oklahoma
Year: 1970
Architect: John M. Johansen
64,400 Square Feet
Cost: $2,000,360

The L.F. Smith Elementary in Columbus, IN, and the Mummers Theater, also by Johansen, share many of the same characteristics. Most noticeably, the design is very additive, Figure 56, drawing attention to each space individually. Even spaces like the mechanical rooms and the circulation have their own form and distinctiveness, Figure 57. Again, Johansen uses the contrast between colored steel and concrete to set off different shapes. Johansen stacks materials and forms against each other in a way that gives the design an almost industrial appearance. The comparison between the rectangular masses of space and the thin forms that connect them makes a very pleasing composition, Figure 58.

Figure 56. The stacked forms appear separate but function as one.

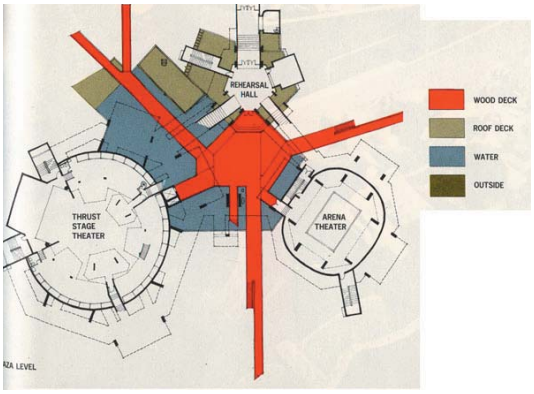


Figure 57. The plan shows how the stacking of the different functions.

Figure 58. Thin, delicate tubular shapes connect the rectangular masses creating a unique composition.

JOHN W. CHORLEY ELEMENTARY SCHOOL

Location: Middletown, NY
Year: 1964-1969
Architect: Paul Rudolph

In the design for Chorley Elementary, Paul Rudolph does a number of things very well. One of the admirable qualities of the design is the successful use and organization of repetitive spaces, as can be seen best in Figure 59. All of the classrooms are essentially the same form just repeated in different quantities on either side of the main corridor. The larger spaces such as the gym and even the circulation are simply proportioned versions of the same slope-roofed shape. Another successful aspect of the design is the abundant use of clerestories. Rudolph takes advantage of the offset between the angled roofs and puts clerestories in wherever possible to flood light into the classrooms which are only divided by folding walls, Figure 60. The interior photo, Figure 61, illustrates how the fenestration and the exposed structure allows light to enter, keeping the spaces flooded with natural lighting.

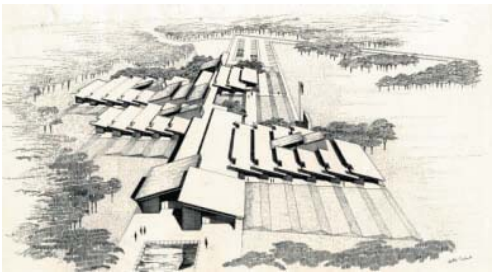


Figure 59. Repetitive components placed in an asymmetrical pattern gives the design interest.

Figure 60. Clerestory windows allow light to flood deep into the clasrooms which are essentially large open spaces.

Figure 61. Light freely passes through the open members of the structure and into the spaces.

ADMIRAL LORD NELSON SECONDARY SCHOOL

Location: Portsmouth, Hampshire
Architect: Hampshire County Architects
900 Students

I made a case study of Admiral Lord Nelson Secondary School in large part because of the organization of the spaces. Much like my own, the site for this project is very linear and located along a main transportation link. I observed closely the progression of the spaces and the layout based on more public uses versus private uses. Figure 62 illustrates how the spaces are placed along a long, linear corridor. Another interesting aspect to me is that the spaces along the corridor do not make it a straight regular path. Instead, spaces open up off the main path so it seems a bit more open and not so restricted and forcing people to stay only within its limits. Figure 63 shows how the corridor is also opened up by having one side exposed to both the floor below and skylights above.

Figure 62. Ground floor plan showing relationship of building to road as well as organization of rooms.

Figure 63. Photo of corridor, to the left overlooking the floor below and the skylight above and to the right, classrooms and lockers.

ST. JOHN'S ABBEY

Location: St. John's University, Minnesota
Architect: Marcel Breuer

I received a thorough tour of St. John's Abbey from Father Roger Kaspirak. My main interest was in the way Breuer so elegantly manipulated the concrete. The folded plate technology is something Breuer employed several times, not only because of the sophisticated form it produces, but also because of the strength it adds to the concrete allowing it to span further distances. At St. John's Abbey, this technique is used for both the walls and the roof of the abbey, Figure 64. The effect of the narrow bottom widening as it reaches the top is very powerful. Though the forms are quite large they seem somewhat delicate in appearance. The interior effect is very unique in that from some angles one cannot even see the triangular form of the folded plates, Figure 65. I also observed the connections and how the folded plates transitioned from the roof plates to the wall plates, Figure 66. Because of the fold, the forms meet naturally and one can see exactly how the forces are transferred.

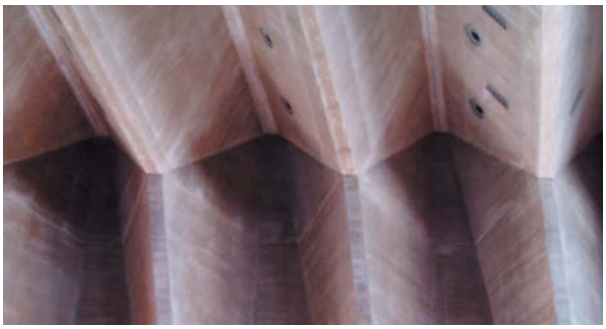


Figure 66. Interior detail of folded plates at roof/wall connection.

Figure 64. Exterior photo of folded plates illustrating dramatic shadows that are created.

Figure 65. The three-dimensionality of the forms unfolds as one enters the space.

Programmatic Requirements

CLASSROOMS: *General Teaching*

DESCRIPTION:

These spaces will support a variety of lecture type classes such as English or history.

GENERAL

Area	250 s.f. ea.
Quantity	18
Users	Students, Faculty, Administration, Public
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Faculty Offices

Main Entry/Commons

Restrooms

ENVIRONMENTAL

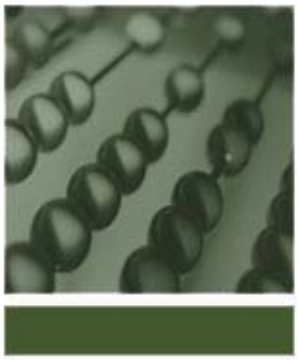
Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	YES
Acoustic Control	YES

EQUIPMENT

Audio/Visual Capabilities

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

CLASSROOMS: *Science*

DESCRIPTION:

It is important that the labs have adequate space for movement when conducting science experiments. Adequate ventilation and egress routes are also essentail.

GENERAL

Area	800 s.f. ea.
Quantity	5
Users	Students, Faculty
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Faculty Offices

Egress

Restrooms

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Sinks

Eye wash station

High efficiency ventilation equipment

Gas & Electric needs

CONSIDERATIONS

Sprinkler Fire Protection

CLASSROOMS: *Family & Consumer Science*

DESCRIPTION:

Activities such as food preparation and textile studies that require open counter space will be conducted in these spaces. Fire safety will be a priority base on these types of activities.

GENERAL

Area	800 s.f. ea.
Quantity	2
Users	Students, Faculty
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Faculty Offices

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Stove/Oven

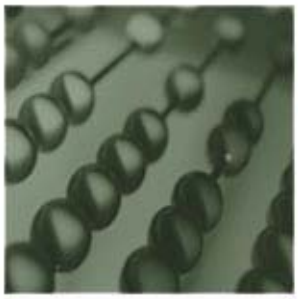
Sinks

Dishwasher

CONSIDERATIONS

Sprinkler Fire Protection






PROGRAMMATIC REQUIREMENTS

CLASSROOMS: *Art*

DESCRIPTION:

This will be a space for painting, ceramics and other art activities the school designates. This includes an auxiliary space for a darkroom for photography. Spills and drips from paint and other media are expected and the space should respond to that possibility.

GENERAL

Area	800 s.f. ea.
Quantity	2
Users	Students, Faculty
Usage	School hours

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	YES
Acoustic Control	NO

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

EQUIPMENT

Sinks

High efficiency ventilation equipment

ADJACENT SPACES

Photography Darkroom

Gallery/Display Space

Faculty Offices

Storage

CONSIDERATIONS

CLASSROOMS: *Technology Education*

DESCRIPTION:

The technology education space will support woodworking, welding, mechanics and other technology related programs. The space will be open to allow for equipment to shift for functionality.

GENERAL

Area	1,500 s.f. ea.
Quantity	2
Users	Students, Faculty
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	YES
Public/Community	NO
Private	YES

ADJACENT SPACES

Automotive Shop

Restroom

Faculty Offices

Storage

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	YES

EQUIPMENT

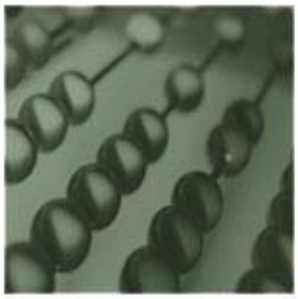
Large scale machinery

Sinks

High efficiency ventilation equipment

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

CLASSROOMS: *Music*

DESCRIPTION:

Music spaces are for instrumental and vocal education. Lessons and practices as well as basic music education will be conducted in these rooms.

GENERAL

Area	800 s.f. ea.
Quantity	2
Users	Students, Faculty
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Auditorium

Faculty Offices

Restrooms

Storage

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	YES

EQUIPMENT

CONSIDERATIONS

CLASSROOMS: *Special Services*

DESCRIPTION:

Students with disabilities often require special attention and a special work environment to help them concentrate. Often times, students take all their classes in this space and learn independent living and have physical therapy.

GENERAL

Area	400 s.f. ea.
Quantity	2
Users	Special needs students, Faculty
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Faculty Offices

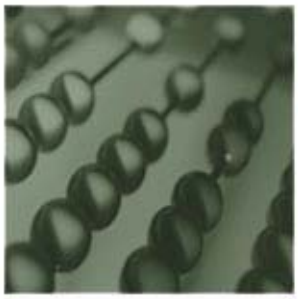
ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

CLASSROOMS: *Distance Learning*

DESCRIPTION:

Students will have the option of taking courses not offered at the high school or even college classes through distance learning. This technology allows them to sit in on classes conducted at other schools.

GENERAL

Area	400 s.f.
Quantity	1
Users	Students, Faculty
Usage	School hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Computer Labs

Faculty Offices

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	YES
Acoustic Control	NO

EQUIPMENT

Audio/Visual Capabilities

CONSIDERATIONS

ADMINISTRATION: *Main Entry*

DESCRIPTION:

Visitors, community members and some faculty will enter the building through this area. From this space, users can navigate the administration area.

GENERAL

Area	400 s.f.
Quantity	1
Users	Students, Faculty, Admin., Community
Usage	School hours, nights, weekends

ACCESS

Main Circulation	YES
Outdoor Egress	YES
Public/Community	YES
Private	NO

ADJACENT SPACES

Administration Offices

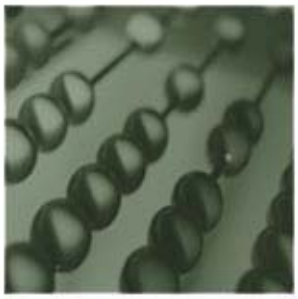
ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

ADMINISTRATION: *Guest/Visitor Reception*

DESCRIPTION:

Guests and visitors check and wait for appointments in the reception area. Students can wait to see the principal or nurse. It should be an easily identifiable space to those unfamiliar to the building.

GENERAL

Area	150 s.f.
Quantity	1
Users	Students, Faculty, Visitors, Administration
Usage	School hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	YES
Private	NO

ADJACENT SPACES

Administrative Spaces

Main Entry

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

ADMINISTRATION: *Conference Room*

DESCRIPTION:

School board meetings may take place in the conference room. The room may accomodate community board meetings as well, as ultimately the decisions of both groups affect the school.

GENERAL

Area	800 s.f.
Quantity	1
Users	Administration, Faculty, Staff, Community
Usage	Variable daytime & evening depending on meeting

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	YES
Private	YES

ADJACENT SPACES

Administrative Spaces

ENVIRONMENTAL

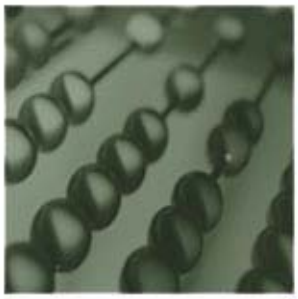
Natural Light	YES
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Audio/Visual Capabilities

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

ADMINISTRATION: *Offices*

DESCRIPTION:

Administrative offices include superintendent, principal, vice principal, business manager and athletic director. Administrators will perform their regular duties and conduct private meeting within these offices.

GENERAL

Area	100-200 s.f. ea.
Quantity	5
Users	Administrators, Visitors
	School Hours
Usage	Process information

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	YES
Private	YES

ADJACENT SPACES

Main Reception

Main Entry/Commons

Storage

Restrooms

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Computers

CONSIDERATIONS

Easily located by visitors

ADMINISTRATION: *Storage*

DESCRIPTION:

Space for extra office supplies and equipment is needed near the Administration offices.

GENERAL

Area	200 s.f.
Quantity	Undetermined
Users	Staff, Administrators, Students, Visitors
Usage	School Hours Reception, Office work

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	YES
Private	YES

ADJACENT SPACES

Administrative Offices

Main Reception

Main Entry/Commons

Storage

Restrooms

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

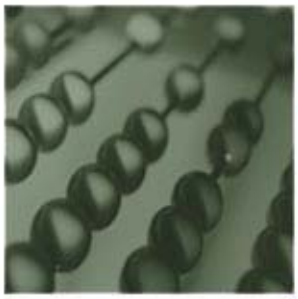
Computers

Copy Machines

CONSIDERATIONS

Enclosed rooms for every space are not necessary






PROGRAMMATIC REQUIREMENTS

OFFICES: *Faculty*

DESCRIPTION:

Faculty will share a large space in which they would perform daily tasks and prepare for classes. Students would also be able to access the faculty easily with questions or concerns. Ideally, the offices would be located near the faculty's main classroom.

GENERAL

Area	300-400 s.f. ea.
Quantity	8-10
Users	Faculty, Students
Usage	School Hours

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	YES
Private	YES

EQUIPMENT

Computers

ADJACENT SPACES

Classrooms

Lounge

Restrooms

CONSIDERATIONS

Special Education, industrial arts, automotive shop and other specialty classrooms may have faculty offices directly within or connected to the space.

OFFICES: *Maintenance/Custodial Supervisor*

DESCRIPTION:

Maintaining a school is full of un-ending tasks. The supervisor would need a place to keep track of projects and perform other duties.

GENERAL

Area	200 s.f.
Quantity	1
Users	Maintenance Supervisor
Usage	School Hours, before or after depending on task

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Custodial Storage

Mechanical/Electrical

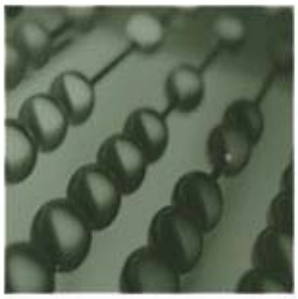
ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

OFFICES: *Technology Supervisor*

DESCRIPTION:

With the incresed technology and use of computers it is important to have staff on hand that are knowledgeable in the field to monitor equipment.

GENERAL

Area	100 s.f.
Quantity	1
Users	Tech. Support Manager
Usage	School hours, occasional after hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Computer Labs

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Computer

CONSIDERATIONS

OFFICES: *Nurse*

DESCRIPTION:

This space will be used to attend to students who get sick or injured during school hours. It may also be utilized to administer necessary health evaluations.

GENERAL

Area	100 s.f.
Quantity	1
Users	Students
Usage	School Hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Administrative Spaces

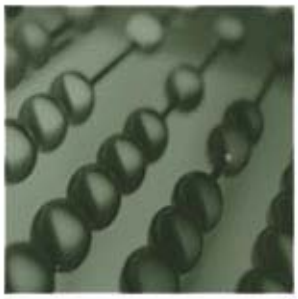
ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

FOOD SERVICE: *Kitchen*

DESCRIPTION:

All food preparation services will happen within the kitchen.

GENERAL

Area	400 s.f.
Quantity	1
Users	Food Service Staff
Usage	School hours, Occasional after school hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Commons

Storage

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Stove/Oven Units

Refrigerators

Large Coolers/Freezers

Sinks

Dishwashers

CONSIDERATIONS

Sprinkler Fire Protection

Special events after school hours may require utilizing the kitchen for catering.

FOOD SERVICE: *Storage*

DESCRIPTION:

Extra storage is necessary for shipments of bulk quantities of food and cooking products used to prepare school lunches and cater special events.

GENERAL

Area	200 s.f.
Quantity	1
Users	Food Service Staff
Usage	School hours, Occasional after school hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Cafeteria

Kitchen

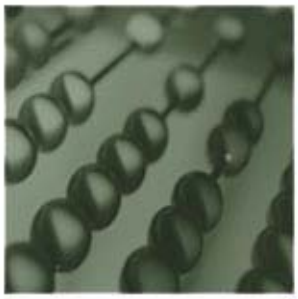
ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

OTHER: *Student Main Entry*

DESCRIPTION:

This should be a space where students can linger as they enter and exit the building, and act as and introduction to the main spaces.

GENERAL

Area	300 s.f.
Quantity	1
Users	Students, Administration, Faculty, Community
Usage	School hours, Occasional after school hours

ACCESS

Main Circulation	YES
Outdoor Egress	YES
Public/Community	YES
Private	NO

ADJACENT SPACES

Commons

Classrooms

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

May blend with commons

OTHER: *Commons*

DESCRIPTION:

The commons will support a number of functions. The space will need to be large and flexible to transition from cafeteria to assembly space to special event and exhibit space.

GENERAL

Area	1,500 s.f.
Quantity	1
Users	Students, Faculty, Staff, Public, Administration, Faculty,
Usage	School hours, Occasional evenings and weekends

ACCESS

Main Circulation	YES
Outdoor Egress	YES
Public/Community	YES
Private	NO

ADJACENT SPACES

Kitchen

Art Gallery

Restrooms

Custodial Storage

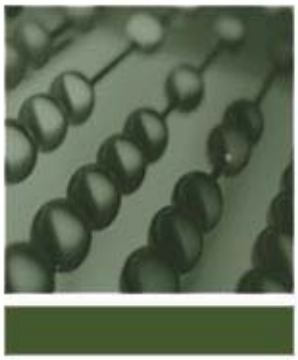
ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

OTHER: *Auditorium*

DESCRIPTION:

The auditorium will be used largely for public or all school gatherings. Other possible uses would include music recitals and such events.

GENERAL

Area	3,000 s.f.
Quantity	1
Users	Students, Faculty, Community
Usage	Various hours

ACCESS

Main Circulation	YES
Outdoor Egress	YES
Public/Community	YES
Private	NO

ADJACENT SPACES

Music Rooms

Gallery

Commons

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	YES

EQUIPMENT

Audio/Visual Capabilities

CONSIDERATIONS

In close proximity to other community accessible spaces

OTHER: *Library*

DESCRIPTION:

Students will be able to study, research, or just read for enjoyment in the library or check books out to use at another time. The community may also find value in the resouces the library can offer.

GENERAL

Area	1,200 s.f.
Quantity	1
Users	Students, Administration, Faculty, Community
Usage	School hours and evenings, some weekends

ACCESS

Main Circulation	YES
Outdoor Egress	YES
Public/Community	YES
Private	NO

ADJACENT SPACES

Computer Labs

Administration Spaces

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	NO
Temperature Control	YES
Glare Control	YES
Acoustic Control	YES

EQUIPMENT

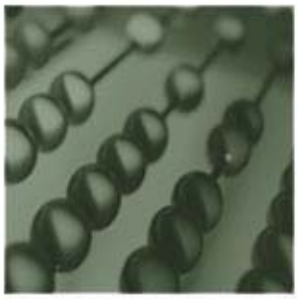
Computers

Audio/Visual Capabilities

CONSIDERATIONS

Temperature control is important based on the materials and media stored within the space






PROGRAMMATIC REQUIREMENTS

OTHER: *Computer Labs*

DESCRIPTION:

Computers are an important part of education today. Much research is conducted through the internet and students can obtain a great deal of information that simply cannot be covered in class due to length of courses.

GENERAL

Area	200 s.f. ea.
Quantity	2
Users	Students, , Administration, Faculty, Community
Usage	During & after school hours

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	YES
Acoustic Control	NO

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	YES
Private	YES

EQUIPMENT

8-10 Computers with internet access

ADJACENT SPACES

Technical Support

Library

Distance Learning

CONSIDERATIONS

Computer equipment can significantly raise the temperature in a computer lab so cooling will be important

OTHER: *Gallery*

DESCRIPTION:

The gallery will support exhibition type activities for the community to view art-work and projects done by students. Work by local artists may also be displayed within this space.

GENERAL

Area	800 s.f.
Quantity	1
Users	Students, Faculty, Community
Usage	Varied display times

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	YES
Acoustic Control	NO

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	YES
Private	NO

EQUIPMENT

ADJACENT SPACES

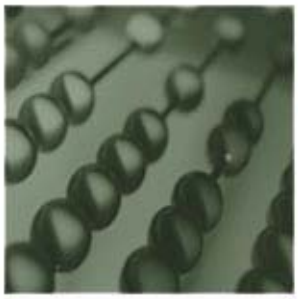
Art Rooms

Technology Education Rooms

CONSIDERATIONS

In close proximity to other community accessible spaces






PROGRAMMATIC REQUIREMENTS

OTHER: *Faculty Lounge*

DESCRIPTION:

The faculty lounge space would consist of a small kitchen space near the faculty offices where they can prepare or store lunch to eat in their offices.

GENERAL

Area	300 s.f.
Quantity	1
Users	Faculty
Usage	Daytime during lunch hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Faculty Offices

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Microwave

Refrigerator

Sink

CONSIDERATIONS




OTHER: *Locker Space*

DESCRIPTION:

Locker space does not need to be a defined space and could be integrated into the circulation paths, but should be accounted for nevertheless.

GENERAL

Area	200 s.f.
Quantity	N/A
Users	Students
Usage	School Hours

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	NO
Private	YES

EQUIPMENT

Lockers

ADJACENT SPACES

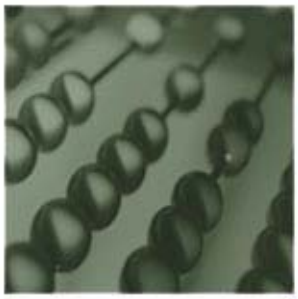
Main Entry/Commons

Classrooms

Restrooms

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

SUPPORT SERVICES: *Large Restrooms*

DESCRIPTION:

Spaces will be provided for both males and females and will accomodate handicaped individuals.

GENERAL

Area	400 s.f. ea.
Quantity	2 Men's & 2 Women's
Users	Students, Faculty
Usage	School Hours

ACCESS

Main Circulation	YES
Outdoor Egress	NO
Public/Community	YES
Private	YES

ADJACENT SPACES

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

12 toilets total

12 sinks total

12 urinals total

CONSIDERATIONS

SUPPORT SERVICES: *Small Restrooms*

DESCRIPTION:

Spaces like the administrative and faculty offices may need small one or two stall bathrooms. Small bathrooms are also useful directly adjacent to technology education and art classrooms for students to easily clean up.

GENERAL

Area	100 s.f.
Quantity	Undetermined
Users	Administrative, Faculty, Students
Usage	School Hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Technology Education

Art

Administration

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

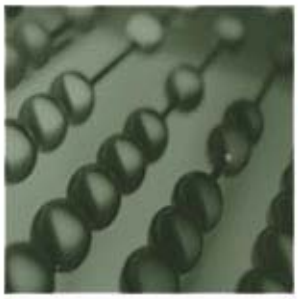
EQUIPMENT

Sinks

Toilets

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

SUPPORT SERVICES: *Custodial Storage*

DESCRIPTION:

Storage for custodial supplies needs to be located at various points throughout the building for convenience and accebility for staff. Mops, brooms, buckets and cleaning chemicals are all stored in the custodial closets. Restroom supplies are also kept here.

GENERAL

Area	400 s.f.
Quantity	Undetermined
Users	Maintenance Staff
Usage	School Hours, before or after depending on task

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Maintenance Office

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Sinks - Floor Drain or Wash Basin

Laundry Macines

CONSIDERATIONS

SUPPORT SERVICES: *Mechanical/Electrical*

DESCRIPTION:

These spaces are needed for large mechanical equipment such as generators, waterheaters, heating and cooling equipment, etc. A central space is also necessary to monitor electrical systems and equipment.

GENERAL

Area	3,000 s.f.
Quantity	Undetermined
Users	Maintenance Staff
Usage	School Hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Maintenance Office

ENVIRONMENTAL

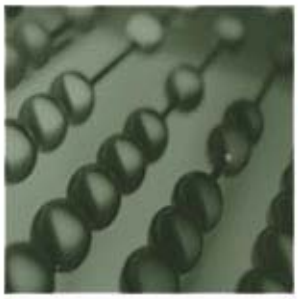
Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Necessary Mechanical & Electrical

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

SUPPORT SERVICES: *Storage*

DESCRIPTION:

Large quantities of supplies are required to help a school function. Storage is needed for everything from paper and pencils to desks and tables.

GENERAL

Area	400 s.f.
Quantity	Undetermined
Users	Staff
Usage	School Hours

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Adminstrative Offices

Library

Faculty Offices

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

SUPPORT SERVICES: *Circulation*

DESCRIPTION:

Circulation layout can dramatically enhance the flow of traffic and the organization of a building. For an education facility, the desired form of the main circulation can determine the organization of the other spaces and therefore the form of the building.

GENERAL

Area	1,000 s.f.
Quantity	N/A
Users	Administration, Faculty, Staff, Students, Visitors
Usage	School Hours, Varied evenings and weekends

ACCESS

Main Circulation	N/A
Outdoor Egress	YES
Public/Community	YES
Private	YES

ADJACENT SPACES

ENVIRONMENTAL

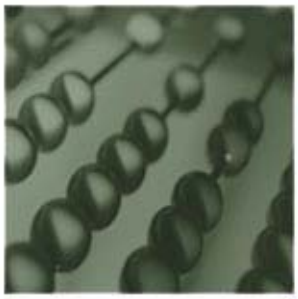
Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

Circulation spaces between classrooms should be designed so that it can be closed off tot he public spaces after school hours.






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Lobby*

DESCRIPTION:

Fans and spectators gather in the lobby before, during and after activities to visit or eat something from the concession stand.

GENERAL

Area	1,000 s.f.
Quantity	N/A
Users	Spectators, Guests, Community
Usage	Mostly evenings during games

ACCESS

Main Circulation	NO
Outdoor Egress	YES
Public/Community	YES
Private	NO

ADJACENT SPACES

Gymnasium

Concessions

Restrooms

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

Shared lobby by gym and pool

ATHLETIC FACILITY: *Concessions*

DESCRIPTION:

Food and drink is prepared and sold in the concession stand during various activities.

GENERAL

Area	300 s.f.
Quantity	1
Users	Volunteers, Students, Faculty
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	YES
Private	NO

ADJACENT SPACES

Lobby

Gymnasium

Storage

Restrooms

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

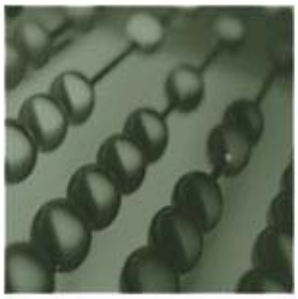
Sinks

CONSIDERATIONS

Shared by gym and pool

20-25 linear feet of counter space per 1,000 seats.






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Restrooms*

DESCRIPTION:

Accessible public restrooms will be available for fans and spectators and others attending the activities in the gymnasium. Both men's and women's facilities are necessary.

GENERAL

Area	500 s.f.
Quantity	1 Men's & 1 Women's
Users	People attending or working at the activity
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	YES
Private	NO

ADJACENT SPACES

Lobby

Custodial Storage

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Water Closets

Sinks

Urinals

CONSIDERATIONS

ATHLETIC FACILITY: *Lobby Storage*

DESCRIPTION:

Space is necessary for storage of concessions products, tables and chairs for the lobby and other miscellaneous items.

GENERAL

Area	200 s.f.
Quantity	1
Users	Staff
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Lobby

Concessions

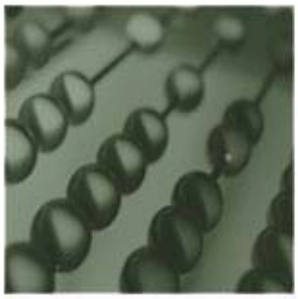
ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Custodial Storage*

DESCRIPTION:

Custodial storage is needed near the bathrooms and lobby concessions for easy access for spills. Other spaces are needed for supplies to clean the gymnasium, pool and locker rooms areas and wash athletic uniforms as well as cleaning materials.

GENERAL

Area	150-250 s.f.
Quantity	Undetermined
Users	Maintenance Staff
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Locker Rooms

Bathrooms

Gymnasium

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Sinks

Laundry Machines

CONSIDERATIONS

The custodial spaces that serve the gymnasium and pool could be combined with the mechanical spaces

ATHLETIC FACILITY: *Gymnasium*

DESCRIPTION:

The gymnasium consists of two adjacent playing courts and one main game court overlaying them, which can serve a number of sports, and seating for spectators. Physical education classes will also be held in this area.

GENERAL

Area	13,000 s.f.
Quantity	1
Users	Athletes, Coaches, Spectators
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	YES
Public/Community	YES
Private	YES

ADJACENT SPACES

Locker Rooms

Coaches Offices

Mechanical Room

Storage

Pool

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	YES
Acoustic Control	NO

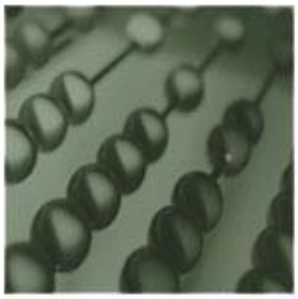
EQUIPMENT

Telescopic Bleachers

CONSIDERATIONS

Seating for 1,500 people






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Gym Equipment Storage*

DESCRIPTION:

Extra sports equipment such as basketballs, volleyballs, etc., should be stored in this area between practices and games.

GENERAL

Area	200 s.f.
Quantity	1
Users	Maintenance Staff
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Gymnasium

Mechanical

Custodial

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

ATHLETIC FACILITY: *Pool*

DESCRIPTION:

This area will house and olympic size pool for swimming and springboard diving with seating for spectators. The pool will also be open to community recreational activities.

GENERAL

Area	27,000 s.f.
Quantity	1
Users	Community, Guests, Students, Faculty, Staff
Usage	Activities during days, evenings, and weekends

ACCESS

Main Circulation	NO
Outdoor Egress	YES
Public/Community	YES
Private	YES

ADJACENT SPACES

Gymnasium

Mechanical

Custodial

ENVIRONMENTAL

Natural Light	YES
Natural Ventilation	YES
Temperature Control	YES
Glare Control	YES
Acoustic Control	NO

EQUIPMENT

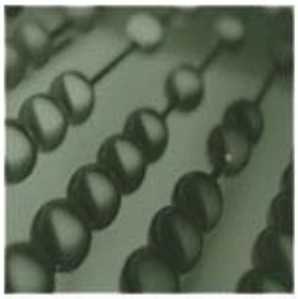
Permenant Bleachers

CONSIDERATIONS

Seating for 600

Various Functions Under Bleachers






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Pool Equipment Storage*

DESCRIPTION:

Large equiment such as lane dividers as well as recreational equipment for the pool can be stored in this space.

GENERAL

Area	300 s.f.
Quantity	1
Users	Maintenance Staff
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Pool

Mechanical

Custodial

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	NO
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

Possibly located under spectator seating

ATHLETIC FACILITY: *Locker Rooms*

DESCRIPTION:

Before and after game team meeting can be conducted in the locker rooms. There should be locker storage in the changing area and adjacent showers and toilets.

GENERAL

Area	1,000 s.f. ea.
Quantity	1 Men's & 1 Women's
Users	Athletes and Coaches
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Gymnasium

Pool

Coaches Offices

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

10 Shower Heads

Toilets

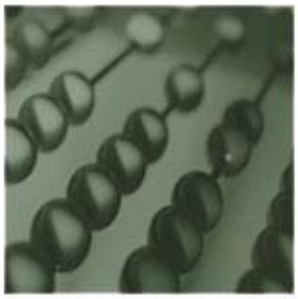
Sinks

44 Lockers

CONSIDERATIONS

ADA compliant facilities






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Coaches Offices*

DESCRIPTION:

Coaches can have the privacy to prepare for an event or practice as well as conduct meeting with athletes.

GENERAL

Area	200 s.f. ea.
Quantity	2
Users	Athletes, Coaches,
Usage	Practices and event days

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Gymnasium

Pool

Showers

Locker Rooms

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

Shower

Toilet

CONSIDERATIONS




ATHLETIC FACILITY: *Officials Dressing*

DESCRIPTION:

This space is used by officials, before and after games and tournaments.

GENERAL

Area	200 s.f. ea.
Quantity	2
Users	Officials, Coaches,
Usage	Practices and event days

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

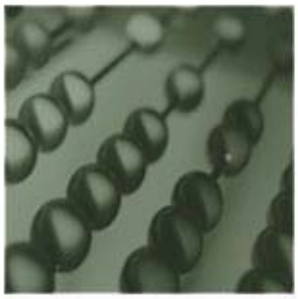
EQUIPMENT

Shower

Toilet

CONSIDERATIONS






PROGRAMMATIC REQUIREMENTS

ATHLETIC FACILITY: *Training Room*

DESCRIPTION:

This space is used by athletes who need injury treatment-taping, massage,cuts, etc.- and for storage of necessary medical supplies.

GENERAL

Area	200 s.f.
Quantity	1
Users	Athletes, Coaches,
Usage	Practices and event days

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Gymnasium

Pool

Locker Rooms

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	NO
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

CONSIDERATIONS

ATHLETIC FACILITY: *Mechanical*

DESCRIPTION:

A great deal of mechanical equipment is required to operate a spaces as large as the gymnasium and pool.

GENERAL

Area	1,500 s.f.
Quantity	1
Users	Maitenance Staff
Usage	Activities during days and evenings and some weekends

ACCESS

Main Circulation	NO
Outdoor Egress	NO
Public/Community	NO
Private	YES

ADJACENT SPACES

Gymnasium

Pool

Custodial

ENVIRONMENTAL

Natural Light	NO
Natural Ventilation	YES
Temperature Control	YES
Glare Control	NO
Acoustic Control	NO

EQUIPMENT

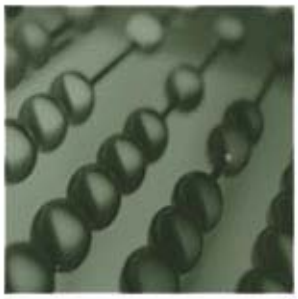
Mechanical & Electrical Equipment

CONSIDERATIONS

This space could be shared by the gym and pool

Partially located under spectator stands in pool area






PROGRAMMATIC REQUIREMENTS

SITE: *Parking*

DESCRIPTION:

Enough parking is required for students, faculty and administration and staff. Parking should also accomodate events at the athletic facility. Three parking zones will be necessary: Gymnasium parking, Student parking/Bus drop off, and Administration/Staff/Visitor parking.

GENERAL

Area	Approx. 30,000 s.f.
Quantity	N/A
Users	Visitors, Faculty, Staff, Administration, Students
Usage	All hours

ENVIRONMENTAL

Natural Light	N/A
Natural Ventilation	N/A
Temperature Control	N/A
Glare Control	N/A
Acoustic Control	N/A

ACCESS

Main Circulation	N/A
Outdoor Egress	N/A
Public/Community	YES
Private	YES

EQUIPMENT

ADJACENT SPACES

Main Entries

Waste Disposal

Athletic Facility Entry

CONSIDERATIONS

Approximately 250 parking spaces would require one van and six car stalls for handicap accessible parking

SITE: *Waste Disposal*

DESCRIPTION:

Disposal units should be easily accessible for pick up by waste management companies. Areas that will generate a great deal of waste include food preparation spaces, computer labs, and industrial arts.

GENERAL

Area	200 s.f.
Quantity	2
Users	Waste Management Co., Staff
Usage	Daytime Hours

ACCESS

Main Circulation	N/A
Outdoor Egress	N/A
Public/Community	NO
Private	YES

ADJACENT SPACES

Athletic Facility

Parking

ENVIRONMENTAL

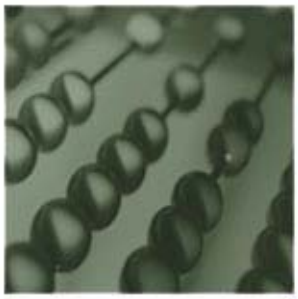
Natural Light	N/A
Natural Ventilation	N/A
Temperature Control	N/A
Glare Control	N/A
Acoustic Control	N/A

EQUIPMENT

Dumpsters

CONSIDERATIONS





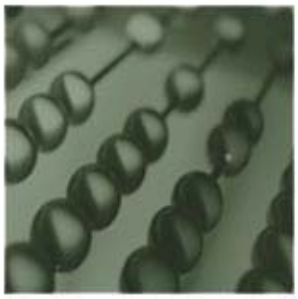

PROGRAMMATIC REQUIREMENTS

PROGRAMMATIC REQUIREMENT TOTALS

CLASSROOMS:				
General Teaching	*18 @*	*250 s.f.*	*4,500 s.f.*	
Science	*5 @*	*800 s.f.*	*4,000 s.f.*	
Family & Consumer Science	*2 @*	*800 s.f.*	*1,600 s.f.*	
Art	*2 @*	*800 s.f.*	*1,600 s.f.*	
Technology Education	*2 @*	*1,500 s.f.*	*3,000 s.f.*	
Music	*2 @*	*800 s.f.*	*1,600 s.f.*	
Special Services	*2 @*	*400 s.f.*	*800 s.f.*	
Distance Learning		*400 s.f.*	*400 s.f.*	
			CLASSROOMS TOTAL	***14,800 s.f.***
ADMINISTRATION:				
Main Entry		*400 s.f.*	*400 s.f.*	
Guest/Visitor Reception		*150 s.f.*	*150 s.f.*	
Conference Room		*800 s.f.*	*800 s.f.*	
Offices	*5 @*	*200 s.f.*	*1,000 s.f.*	
Support		*200 s.f.*	*200 s.f.*	
			ADMINISTRATION TOTAL	***2,550 s.f.***
OFFICES:				
Faculty	*8 @*	*400 s.f.*	*3,200 s.f.*	
Maintenance		*200 s.f.*	*200 s.f.*	
Technical/Custodial Supervisor		*100 s.f.*	*100 s.f.*	
Nurse		*100 s.f.*	*100 s.f.*	
			OFFICES TOTAL	***3,600 s.f.***
FOOD SERVICES:				
Kitchen		*400 s.f.*	*400 s.f.*	
Storage		*200 s.f.*	*200 s.f.*	
			FOOD SERVICES TOTAL	***600 s.f.***
OTHER:				
Student Main Entry		*300 s.f.*	*300 s.f.*	
Commons		*1,500 s.f.*	*1,500 s.f.*	
Auditorium		*3,000 s.f.*	*3,000 s.f.*	
Library		*1,200 s.f.*	*1,200 s.f.*	
Computer Labs	*2@*	*200 s.f.*	*400 s.f.*	
Gallery		*800 s.f.*	*800 s.f.*	

Faculty Lounge		*300 s.f.*	*300 s.f.*	
Locker Space		*200 s.f.*	*200 s.f.*	
			OTHER TOTAL	***7,700 s.f.***
SUPPORT SERVICES:				
Large Restrooms	*4 @*	*400 s.f.*	*1,600 s.f.*	
Small Restrooms	*3 @*	*100 s.f.*	*300 s.f.*	
Custodial Storage		*400 s.f.*	*400 s.f.*	
Mechanical/Electrical		*3,000 s.f.*	*3,000 s.f.*	
Storage		*400 s.f.*	*400 s.f.*	
Circulation		*1,000 s.f.*	*1,000 s.f.*	
			SUPPORT SERVICES TOTAL	***6,700 s.f.***
ATHLETIC FACILITY:				
Lobby		*1,000 s.f.*	*1,000 s.f.*	
Concessions		*300 s.f.*	*300 s.f.*	
Restrooms	*2 @*	*500 s.f.*	*1,000 s.f.*	
Lobby Storage		*200 s.f.*	*200 s.f.*	
Custodial Storage	*2 @*	*250 s.f.*	*500 s.f.*	
Gymnasium		*13,000 s.f.*	*13,000 s.f.*	
Gym Equipment Storage		*200 s.f.*	*200 s.f.*	
Pool		*27,000 s.f.*	*27,000s.f.*	
Pool Equipment Storage		*300 s.f.*	*300 s.f.*	
Locker Rooms	*2@*	*1,000 s.f.*	*2,000 s.f.*	
Coaches Offices	*2@*	*200 s.f.*	*400 s.f.*	
Officials Dressing	*2@*	*200 s.f.*	*400 s.f.*	
Training Room		*200 s.f.*	*200 s.f.*	
Mechanical		*1,500 s.f.*	*1,500 s.f.*	
			ATHLETIC FACILITY TOTAL	***48,000 s.f.***
SITE:				
Parking		*30,000 s.f.*	*30,000 s.f.*	
Waste Disposal	*2@*	*200 s.f.*	*400 s.f.*	
			SITE TOTAL	***30,400 s.f.***
			GRAND TOTAL	***114,350 s.f.***






PROGRAMMATIC REQUIREMENTS

Process Documentation

PROCESS DOCUMENTATION

I began the process by taking photographs of characteristic forms found on the Midwest prairie landscape. I wanted to observe these forms and attempt to find within them a conceptual idea that would guide my design.

The grain elevator is a common form seen in rural settings. I appreciate it for its rigid form and the texture of the materials often used.

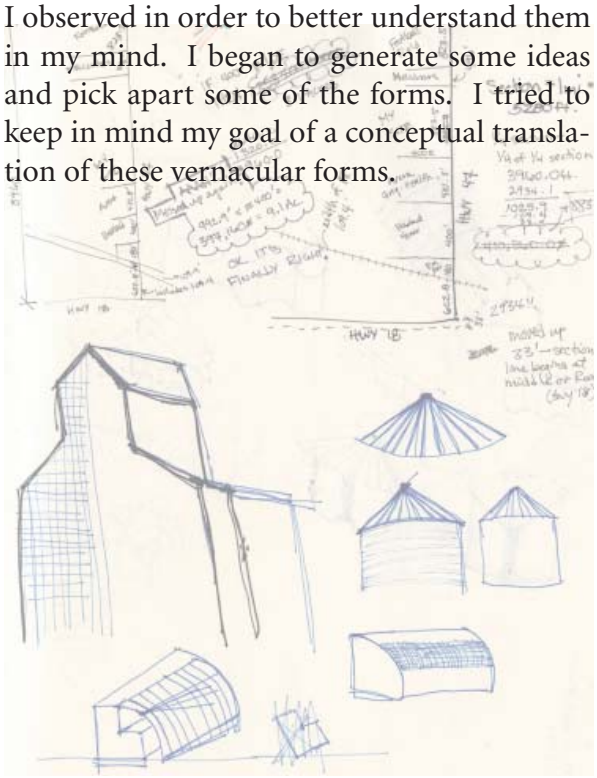
The form that most caught my eye was the silo with the metal shed against it. I compared the strong seams along the umbrella-like roof to the structure that would hold the roof up. I observed that the corrugated metal on the curvilinear object ran horizontally while the corrugation on the rectilinear runs vertically.

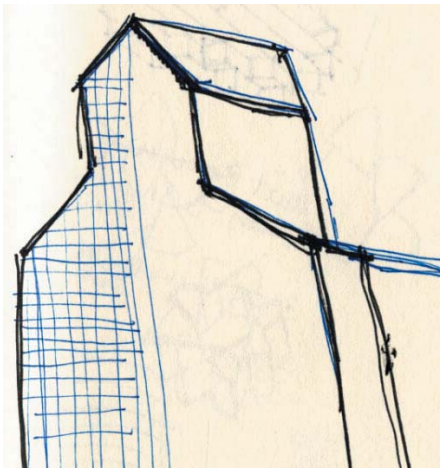
The repetitive pattern of the silos was particularly appealing to me. I feel it gives them a strong connection though they are not directly linked.

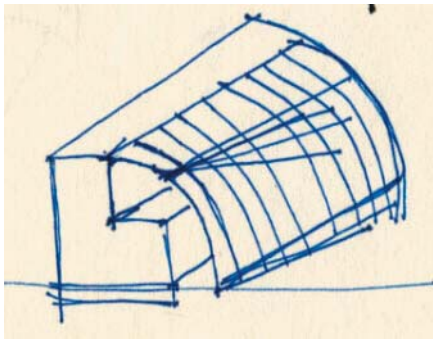
Another form quite often seen in the Midwest is the quonset type structure. This one in particular caught my attention and I felt it was important to document it for later reference.

PROCESS DOCUMENTATION

Next, I did some sketches of the various forms I observed in order to better understand them in my mind. I began to generate some ideas and pick apart some of the forms. I tried to keep in mind my goal of a conceptual translation of these vernacular forms.



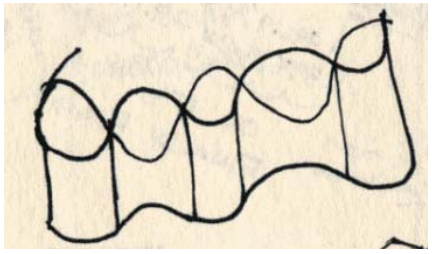




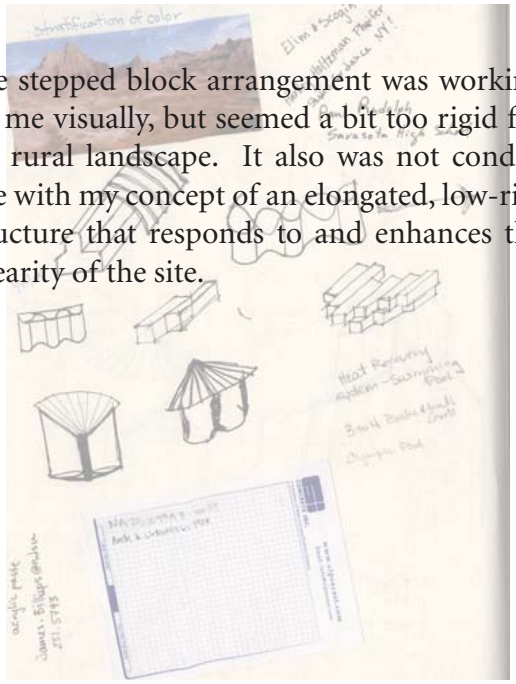
PROCESS DOCUMENTATION

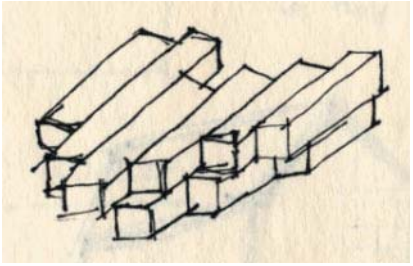
Since I was beginning the process by thinking about form, I decided to work in clay which would allow a bit more artistic creativity.

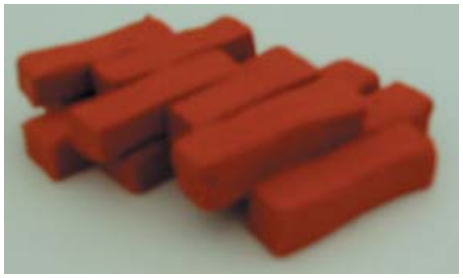
I was simultaneously sketching freely to try to generate some unique forms and ideas. The flowing ribbon-like sketch was appealing, but I wanted to continue producing drawings and forming shapes with the clay.



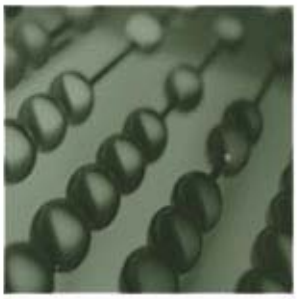
The stepped block arrangement was working for me visually, but seemed a bit too rigid for the rural landscape. It also was not conducive with my concept of an elongated, low-rise structure that responds to and enhances the linearity of the site.





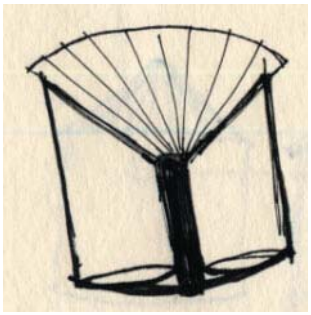







PROCESS DOCUMENTATION

During my sketching process, I was trying to express a thought I had floating in my head and a fan-like shape is what turned out. I had in my mind this idea of inverting the roof of the silo structure and, like I was originally thinking, representing the seams with structural members. Cutting it into a fan-like shape just gave the form a more sophisticated look.



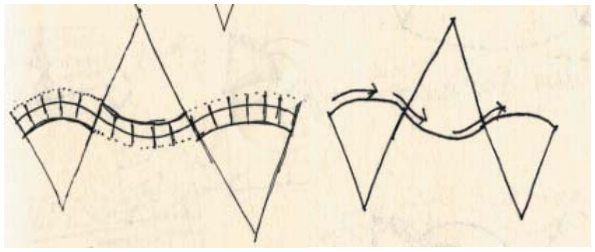
I decided to dwell on this sketch and work the idea out in model. I did two larger scale models of what I thought the shape would be. I was inclined to use a corrugated material on the first one as a reference to the metal used on the silos.

In the second I tried to represent more clearly the idea of the structural members acting as texture on the roof.

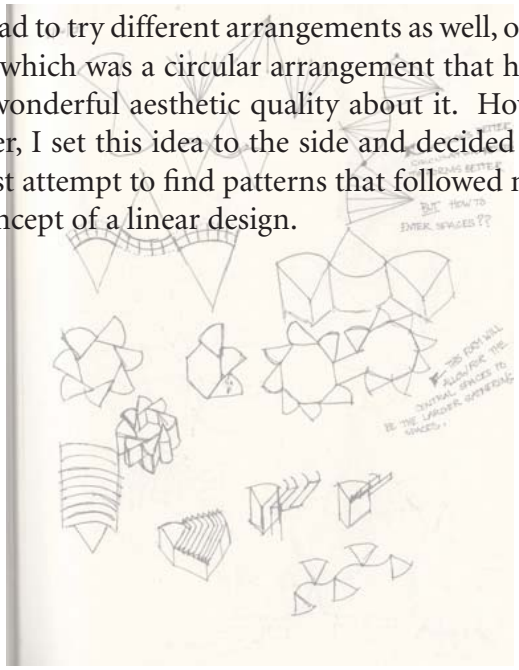
I characterized the shape as a classroom because its acoustical shape is one that is conducive to lecture type activities.

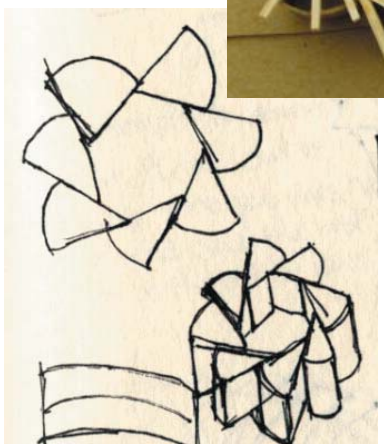
PROCESS DOCUMENTATION

Once I had this initial shape that I began to attempt to organize the classrooms. Right away I was excited to find an arrangement that created a very interesting flowing path between the forms that I envisioned as the main corridor. The pattern allowed for an extended corridor that would make use of the linear site. I pictured a very sculptural glass roof that would slant and curve where the structural members met.

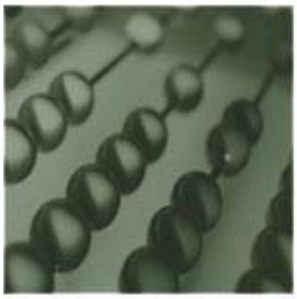


I had to try different arrangements as well, one of which was a circular arrangement that had a wonderful aesthetic quality about it. However, I set this idea to the side and decided to first attempt to find patterns that followed my concept of a linear design.





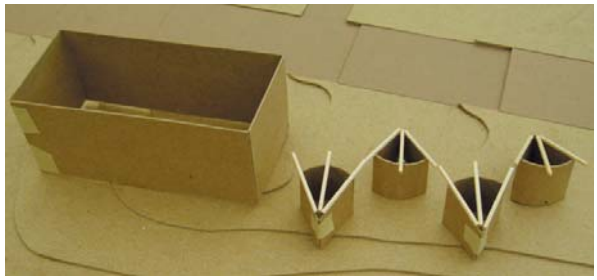




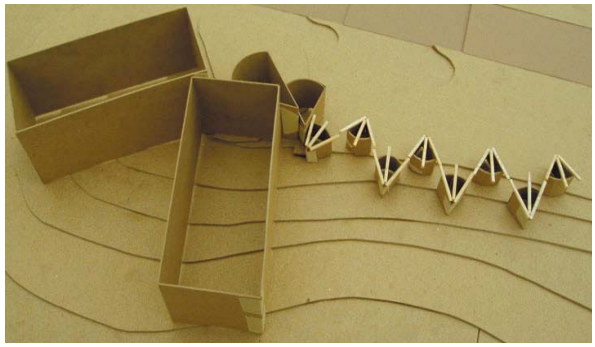

PROCESS DOCUMENTATION

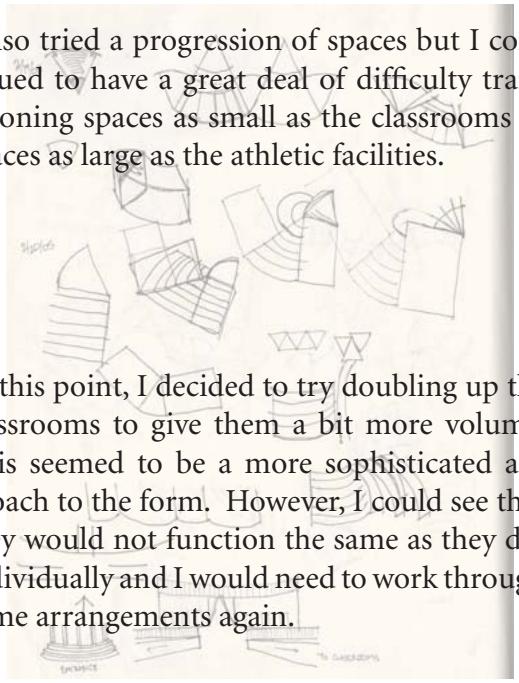
In order to avoid entering the classrooms on the curve, I tried an arrangement in which the curves faced outward from where the corridor would most likely be. I was dissatisfied with aesthetic quality of this arrangement.

Another problem with the form and the arrangement was the scale of the classrooms in comparison to volumes such as the gymnasium and pool. I tried scaling the size of the classrooms up to be a litter closer in range to the gym but this did not seem appropriate for intimate classroom settings.

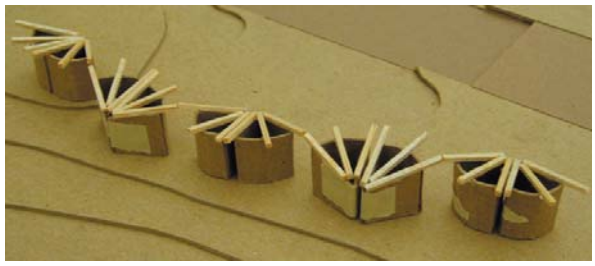


I also tried a progression of spaces but I continued to have a great deal of difficulty transitioning spaces as small as the classrooms to spaces as large as the athletic facilities.



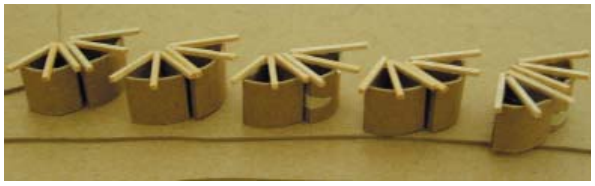


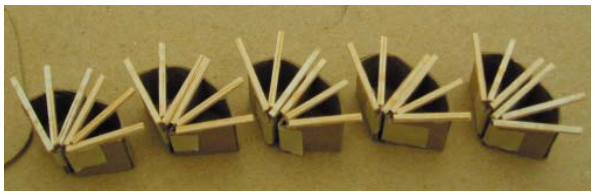
At this point, I decided to try doubling up the classrooms to give them a bit more volume. This seemed to be a more sophisticated approach to the form. However, I could see that they would not function the same as they did individually and I would need to work through some arrangements again.



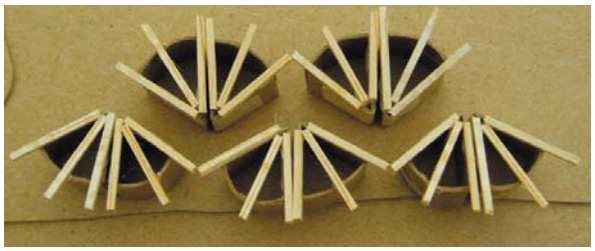
PROCESS DOCUMENTATION

Returning to my original photos from the landscape I was reminded of the repetitive stacked pattern of silos. This layout was pleasing to me from all views so I documented it and continued to try different layouts.

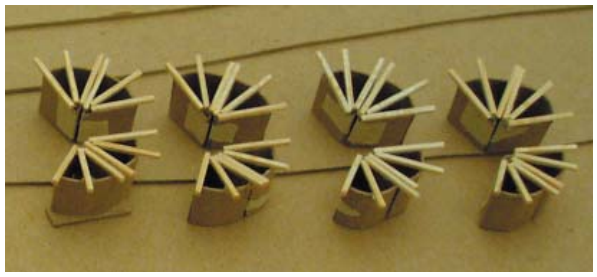




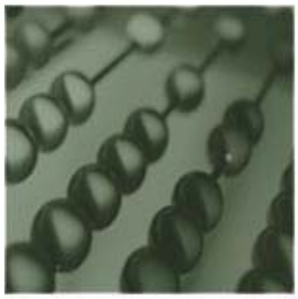
I worked with one layout with the points facing toward each other that would allow access on a flat wall. I saw too many problems with roof drainage in this design.



Another layout I was particularly fond of was one in which the fans directly mirrored one another. Again, I could see problems with drainage and, as with many of these arrangements, I was having problems visualizing a connection between the classrooms and the other functions that need to take place in a school.





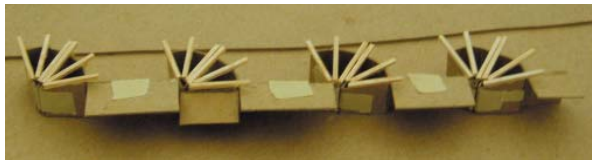



PROCESS DOCUMENTATION

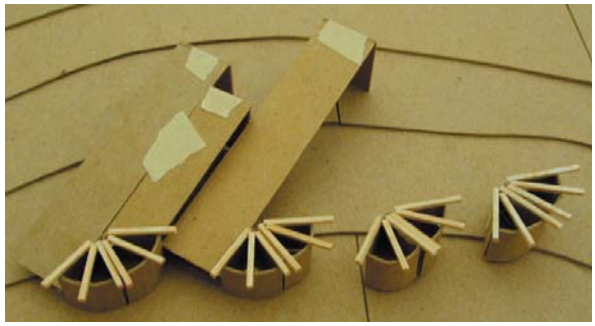
I felt limited in the amount of different arrangements I could produce because I was attempting to maintain a good solar orientation at the same time.

Eventually I arrived at a solution that had potential. By mirroring the row of fan shapes both vertically and horizontally, I was also optimizing daylighting during the winter months, but at different times of the day.

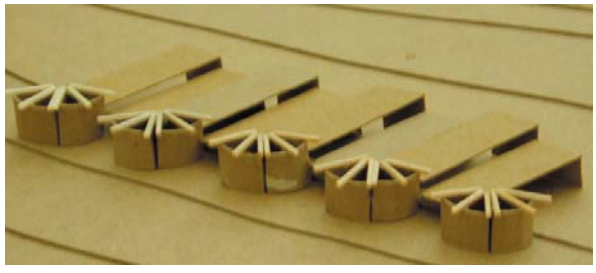
The next problem I faced was connecting these spaces to other spaces that would create a more regular shaped, larger classroom as well as faculty offices and admin spaces.



By observing the work of architects like John Johansen, I felt freer to create additive forms that did not necessarily flow into the other spaces, but did work with the classrooms and share some of the same characteristics.

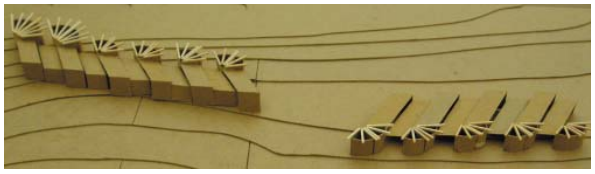


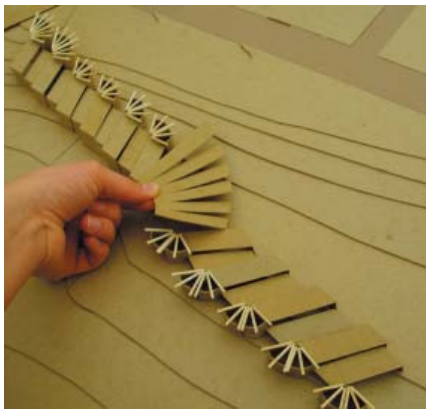
The result was a repetitive, modular row of classrooms that began to take on an organic feel, reminiscent of the wheat stalks harvested in the Midwest.



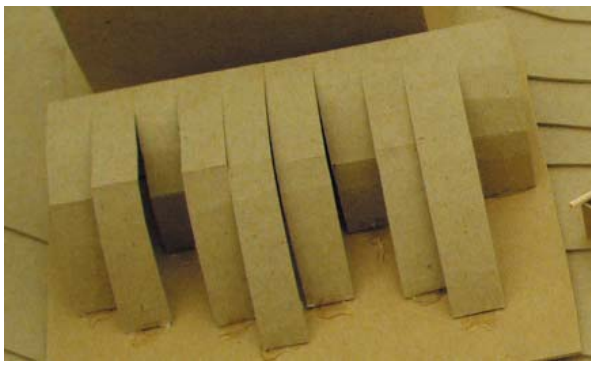
PROCESS DOCUMENTATION

The next major problem I faces was joining these layouts with the larger spaces. I found a form that worked in plan for the arrangement of the administration and faculty offices. It was not until I cut the shape out to explore it in 3D that it really made sense. Once again the form shared the same characteristics as the others, the finger-like extensions, and was also suggestive of Native American forms. I translated the commons at the end in the same way and it became an excellent way to transition to the large athletic facilities.





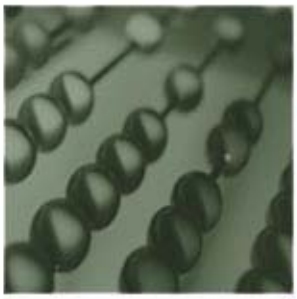
The pool design came very quickly and very easily. I would not fully understand it, however, until I understood the gymnasium, which took much more time and exploration. My visit to St. John's Abbey was the best thing I could have done on the road to understanding both structures.



I had an initial idea of a folded plate type of form but needed to clarify the idea in my head somehow. After my trip to St. John's, the solution did not elude me much longer. I observed the folded plate technology employed by Breuer and shortly after knew exactly how I could solve the problem of the gymnasium.

This would lead me right into my final design solutions for the school.

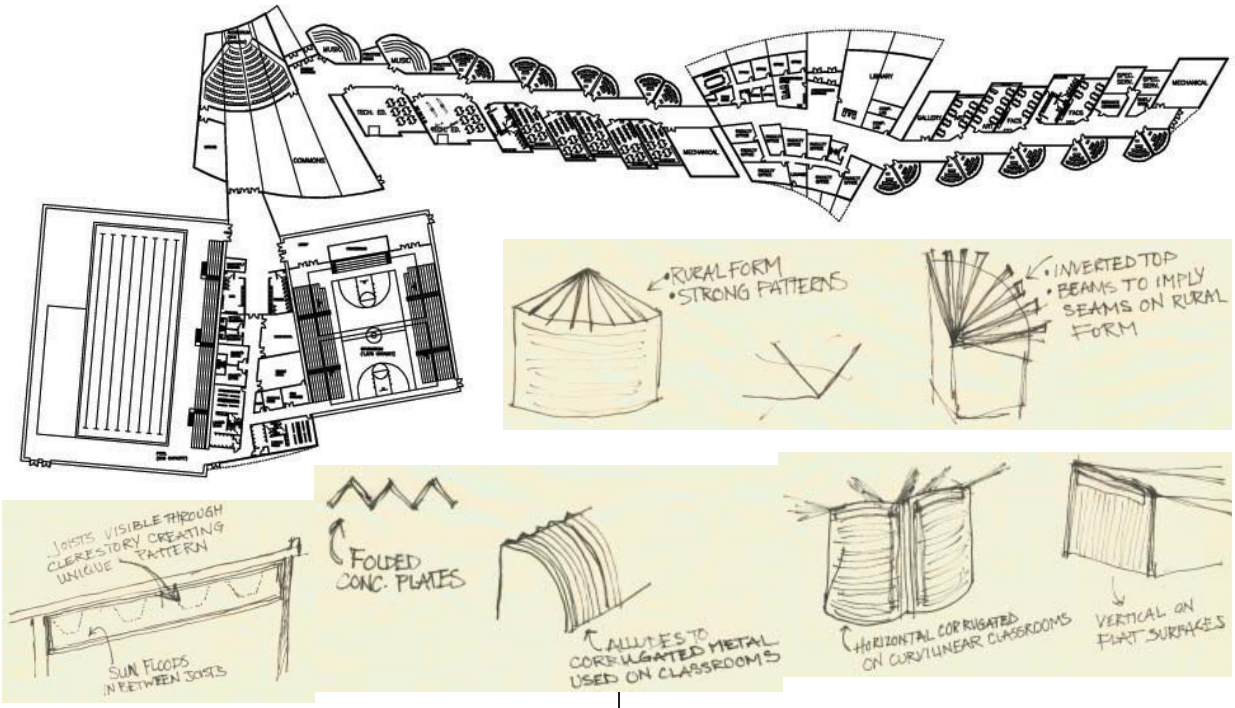




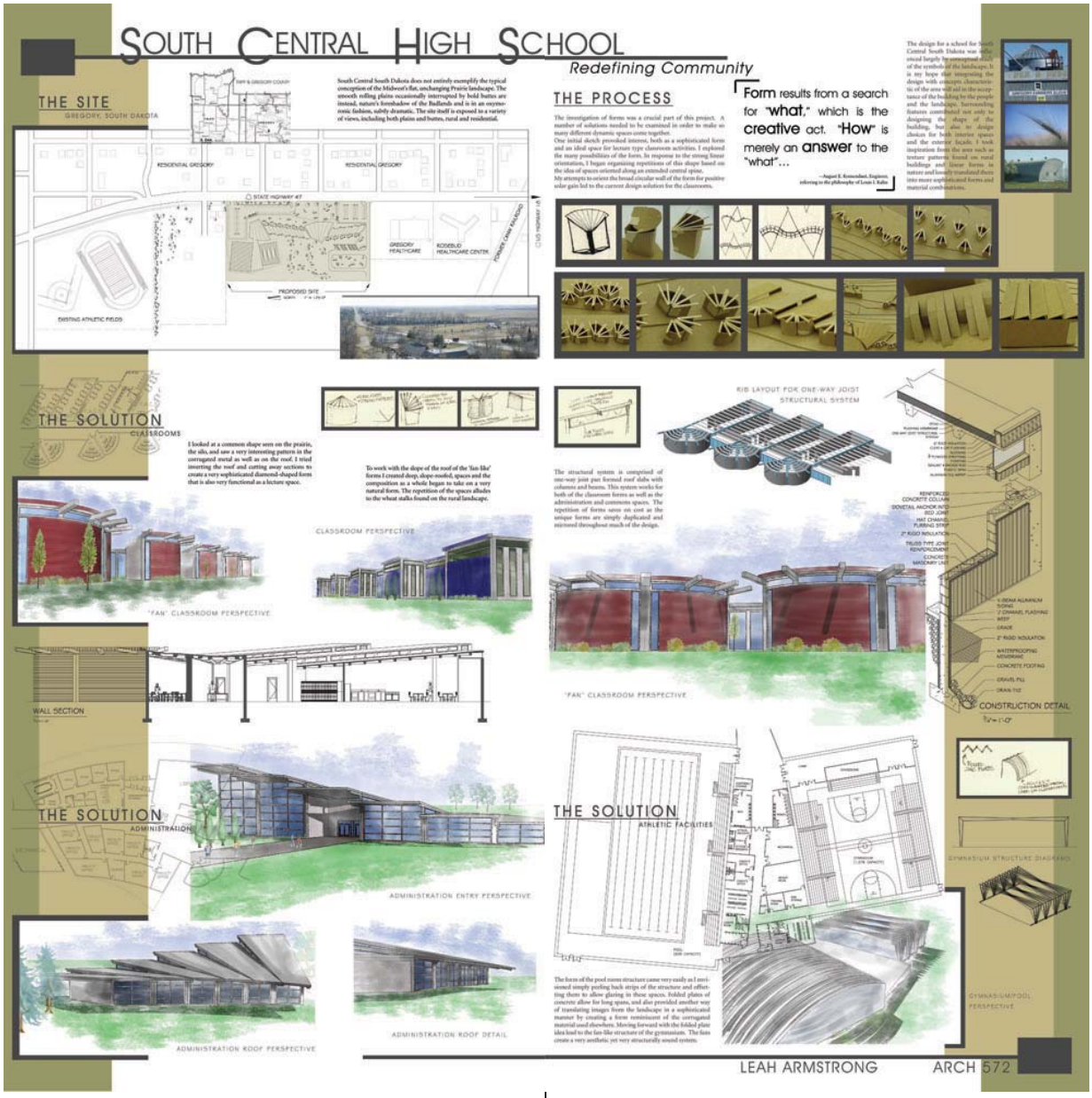

PROCESS DOCUMENTATION

Solution Documentation

SOLUTION DOCUMENTATION



SOLUTION DOCUMENTATION



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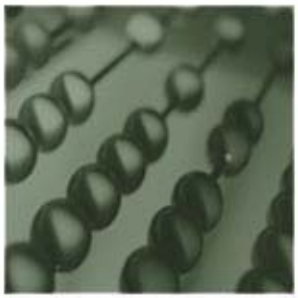


REFERENCE LIST

APPENDIX A: *Figure Captions*

Figure 1. County map of South Dakota showing Gregory County within the state. Approxi mate position of Gregory is pinpointed (Where 2havefun in America, n.d.).
Figure 2. Map illustrating how US Highway 18 runs through Gregory county and the location of the cities along its course.
Figure 3. Recent student/teacher ratios for each school in relation to the ideal ratio of 15:1 (redline) (School Tree, 2000-2005a-h).
Figure 4. Colome High School in 1942 (Jorgensen, Osborne, Harter, Dedlow, Zimmerman, 1983).
Figure 5. Colome High School as it looks today (photo by Leah Armstrong, 2004).
Figure 6. First public school building in Gregory (This is Gregory's golden anniversary, 1954).
Figure 7. Old Gregory high school building (This is Gregory's golden anniversary, 1954).
Figure 8. Gregory High School as it looks today (photo by Leah Armstrong, 2004).
Figure 9. New two-room frame school building (Gregory County Historical Society, 1981).
Figure 10. New brick school building (Gregory County Historical Society, 1981).
Figure 11. Burke High School as it looks today (photo by Leah Armstring, 2004).
Figure 12. First schoolhouse, Bonesteel, 1893 (Gregory County Historical Society, 1980).
Figure 13. Third school building, Bonesteel, 1920 (Gregory County Historical Society, 1980).
Figure 14. First school, Fairfax (Gregory County Historical Society, 1977).
Figure 15. Fairfax's third school building, 1920, was ruined by fire (Gregory County Historical Society, 1977).
Figure 16. Bonesteel-Fairfax High school still partially under construction (photo by Leah Armstrong, 2004).
Figure 17. Yields for the different crops harvested in the Gregory County area (MapStats, 2004).
Figure 18. Graph of different ethnicities among students in Gregory and Tripp Counties (School Tree, 2000-2005a-h).
Figure 19. Graph of age ranges within each town (AreaGuide.net, n.d.a-d).
Figure 20. Current male to female ratio within each school (School Tree, 2000-2005a-h).
Figure 21. Location map of earthquakes in Gregory with intensity represented by the red dots (SD Dept. of Environment, 1989-1997).
Figure 22. 2003 weather data for Gregory, SD (South Dakota climate and weather, n.d.).
Figure 23. Aerial map of the site and surrounding areas (TerraServer USA, 2004).
Figure 24. People enjoy swimming and other water activities on the Missouri River (State of South Dakota, 2004).
Figure 25. Topography map of site location. The main roads, shown in red, represent Highway 18 and Highway 47 (US Dept. of the Interior, 1964).
Figure 26. Soils map for site location (site highlighted in red) (US Dept. of Agriculture, 1984).
Figure 27. Map of South Dakota's diverse geology (SD Dept. of Environment, 1989-1997).
Figure 28. Map of relationship of US Highway 18, State Highway 47 and former path of C&NW RR to site (US Dept. of the Interior, 1964).
Figure 29. Chicago & North Western Railroad boxcar (Chicago & North Western Historical Society, 2004).
Figure 30. The Gregory High School football field, track and softball fields are located just north of the site (Winter, n.d.).

APPENDIX A: *Figure Captions*

Figure 31. Gregory buttes, on top of which rest the watertower and the memorial wall and scenic overlook (photo by Leah Armstrong, 2004).
Figure 32. South east view of Avera Gregory Healthcare Center (photo by Leah Armstrong, 2004).
Figure 33. Photo of expansive view of the prairie surrounding the site (photo by Leah Arm strong, 2004).
Figure 34. Sun Path Diagram for 44 degrees Latitude (Brown & DeKay, 2001).
Figure 35. Sundial for 44 degrees Latitude (Brown & DeKay, 2001).
Figure 36. Wind speed diagram for December 1 through December 31 (USDA-A RS, 2002).
Figure 37. Wind speed diagram for June 1 through June 30 (USDA-A RS, 2002).
Figure 38. Existing farmhouse on site (photo by Leah Armstrong, 2004).
Figure 39. Existing storage buildings on site (photo by Leah Armstrong, 2004).
Figure 40. Existing storage buildings on site (photo by Leah Armstrong, 2004).
Figure 41. Avera Gregory Healthcare Center main entrance (photo by Leah Armstrong, 2004).
Figure 42. Avera Rosebud Country Care Center (photo by Leah Armstrong, 2004).
Figure 43. Model of Southside Middle School (BCSC, 2001).
Figure 44. Model of Lincoln Elementary School (BCSC, 2001).
Figure 45. Model of Southside Elementary School (BCSC, 2001).
Figure 46. Model of Central Middle School (BCSC, 2001).
Figure 47. Floor plans emphasizing linear central corridor (Nesmith, 1992).
Figure 48. Site plan showing both Lillian C. Schmitt and Northside schools (Nesmith, 1992).
Figure 49. Perspectives show how the building is scaled to children (Nesmith, 1992).
Figure 50. Plan illustrating central courtyard design (Nesmith, 1992).
Figure 51. Site plan between Schmitt and Northside Schools (Nesmith, 1992).
Figure 52. Perspective of entrance to Northside (Nesmith, 1992).
Figure 53. The different spaces are defined by both material and shape (Two more for Colum bus, 1970).
Figure 54. The bright colors of the steel corridors are accentuated further in contrast to the natural color of the concrete (Two more for Columbus, 1970).
Figure 55. The floor plans more clearly explain the seemingly complicated layout of the multi-level design (Two more for Columbus, 1970).
Figure 56. The stacked forms appear separate but function as one (Blake, 1971).
Figure 57. The plan shows how the stacking of the different functions (Blake, 1971).
Figure 58. Thin, delicate tubular shapes connect the rectangular masses creating a unique com position (Blake, 1971).
Figure 59. Repetitive components placed in an asymmetrical pattern gives the design interest (Rudolph, 1970).
Figure 60. Clerestory windows allow light to flood deep into the clasrooms which are essentially large open spaces (Rudolph, 1970).
Figure 61. Light freely passes through the open members of the structure and into the spaces (Rudolph, 1970).
Figure 62. Ground floor plan showing relationship of building to road as well as organization of rooms (Dudek, 2000).

Figure 63. Photo of corridor, to the left overlooking the floor below and the skylight above and to the right, classrooms and lockers (Dudek, 2000).
Figure 64. Exterior photo of folded plates illustrating dramatic shadows that are created (photo by Leah Armstrong, 2005).
Figure 65. The three-dimensionality of the forms unfolds as one enters the space (photo by Leah Armstrong, 2005).
Figure 66. Interior detail of folded plates at roof/wall connection (photo by Leah Armstrong, 2005).

APPENDIX B: *Statement of Intent*

South Central High School
Tripp County, South Dakota

The rural area I am from is dotted with towns of not more than a few thousand people, or for some a few hundred. Many of these towns struggle to maintain small, run-down schools. In this situation it is only a matter of time before these schools close their doors and the students are bussed to the nearest existing institution.

This is slowly becoming a reality for towns in Gregory County and Tripp County in South Central South Dakota. I propose a plan for consolidation. The design of a new facility would ultimately enhance the quality of education for students in these towns. I suggest the school boards avoid waiting until all financial support fails. Combining funds could provide technology and resources that would further opportunities for the students. Combining enrollments would enhance the ability of students and the facility to compete with other schools intellectually, culturally and athletically.

I would consider it a success if the community closest to the new development would prosper from such a change, but not at the cost of ruining the other four. I would then suggest that the other towns maintain elementary or junior high level facilities. Closing as many as 5 high schools is a large step. The idea is that the new building last for these communities for the next 50 years. A sense of reliability is vital in convincing each town that combining enrollment at a new school is truly a beneficial approach.

The aspiration of this thesis is to give these communities something that is lacking in their lives, architecture that stirs the emotions, and helps people open their eyes and consider their potential.

The theoretical premise of this design is about more than enrollment and population. It instead addresses the issue of how to design a building for the students of these rural communities. A balance between seeking advanced technology in education while maintaining the personal student attention that is so beneficial. This search for an architectural solution to a "Philosophy of Education" is what will drive this project to a successful finish.

APPENDIX C: *Design Thesis Proposal*

I. Title

South Central High School: Redefining Community

II. Building Typology

I intend to provide an educational facility for the consolidation of Colome High School in Tripp County, Gregory High School, Burke High School and possibly Bonesteel-Fairfax High School in Gregory County.

III. User/Client Description

The client for the new public high school will be the school boards of the consolidating districts, Colome, Burke and Gregory. The superintendents and board members value the personal attention that teachers can offer students. There is a great effort to prevent students from "falling through the cracks" by not meeting individual needs. Design considerations will be made to seal these "cracks" and create spaces conducive to the educational philosophy of personal relationships respected by these rural communities. I also hope to respond to input offered by the public in consideration of the same issues.

Two major user groups can be defined. The first consists of the students, grades 7-12, to be educated at South Central High School. Colome currently educates 90 students, Gregory has 284, and Burke has 184 for a total of 518 students. Bonesteel-Fairfax currently receives Federal Impact Aid for their Native American population. It would not be beneficial for them to consolidate as the aid is based on percentage of Native Americans and Colome, Gregory and Burke each have very few Native American students. In the event that the government ceases to sponsor this program, Bonesteel-Fairfax would have no choice but to consolidate. For this reason, I am allowing for their 100 students bringing the total to 618 students. The facility should accommodate a five percent increase in population, up to 650 students, but also have the ability to respond to a diminishing population leaving 587 students.

The second user group includes the administration, faculty and staff employed at the new facility. Administration would be comprised of a school board of 10-12 members with 2-3 representatives from each participating community, 1 school superintendent, 1 school principal to oversee grades 9-12 and a vice principal for grades seven and eight. Also included under administration are 3 office receptionists, a business manager, assistant business manager and 1 athletic director. The school will employ approximately 40 faculty to maintain a 15:1 student-teacher ratio as supported by the National Education Association (NEA) plus a slightly smaller ratio for special needs classes. Additional staff may include: 2 maintenance supervisors, 1 technical support manager, 1 guidance counselor, 4-6 food service providers and possibly 8-10 athletic coaches.

Peak usage would be during school hours, approximately 7:00am to 4:00pm, Monday through Friday during the months of August through May. Special consideration is necessary for usage during athletic events mostly during weekday evenings and occasionally for

tournaments on weekends. Accommodations must be made for 4 different types of parking-faculty, student, visitor, and game day.

IV. Major Project Elements

- Atrium/Entry Space
- Athletic Facility
  - Lobby
  - Locker rooms
  - Coaches offices
  - Maintenance
  - First Aid
  - Concessions
- Cafeteria
  - Support Spaces
- Library
- Commons
- Classrooms
  - Special Education
  - Distance Learning
  - Art/Shop/Home Economics
  - Science Labs
- Offices
- Board Room
- Computer Labs
- Restrooms
- Mechanical/Electrical
- Circulation
- Parking

V. Site Information

The location for South Central High School is the town of Gregory in Gregory County, South Dakota. This region is characteristic of the flat, open prairie of the Great Plains in the Midwest. I also have an important personal and emotional connection with the region as it is the area I was born in, have an understanding of, and have come to appreciate over the 10 years my family has lived there. The site location was extremely important for this project since the chosen community will prosper from such an advancement. I chose a site within the city limits of Gregory. Choosing one town to reap the benefits of the facility was a difficult task. However, locating the new school in the geographical center between the towns would put it in a lifeless field where everyone has to commute. Also, making it more difficult to respond architecturally to different surrounding features. Though many would argue that this is the fairest approach, I reason that establishing supporting amenities-elementary schools, hospitals-in the other communities will allow those towns to grow as well.

The site is located on the edge of Gregory just off of US Highway 18 on State Highway 47 locally known as Park Avenue. I felt an easily accessible site on a well maintained road was important because of the amount of traffic that will occur through transporting students from various distances. The site is slightly raised above the surrounding area and situated so that to the west is an open view of the plains and to the east is the town of Gregory. This will give a variety of natural versus built features to respond to. The site also supports a variety of environments-prairie as well as a more heavily vegetated area of trees to the north. Adjacent to the south of the site is the Gregory Healthcare Center and to the north is the track and football field, creating another advantage to the location of the high school and gymnasium.

Agriculture provides the major economic base for this region. Largely produced crops

include: sunflowers, corn, and sorgum. Cattle and hog production is also extremely important for the rural counties of Gregory and Tripp. In 2002 there were approximately 6,296 people living in Tripp County. As of 2000 6.3% of the population was people under five years of age. People under 18 years of age comprised 27.7% and people 65 and over, 19.7%. The female population consisted of 50.7%. Gregory County had 4,489 occupants-4.9% under age five, 24.3% under age 18 and 51.4% over the age of 65. Females comprised 51.4% of the population. The largest minority group for both counties is Native Americans who make up 11.2% of Tripp County and 5.6% of Gregory County populations. Other minorities such as African Americans make up less than 1% of the population in each county. Another interesting and important statistic is the mean travel time to work for inhabitants. Workers travel an average of 13.9 minutes to their jobs in Tripp County and commute 13.7 minutes in Gregory County.

VI. Project Emphasis

The design of an educational facility allows for the development and study of small versus large scale spaces. One emphasis of my project will be how to relate these spaces to one another. For example, the movement from a commons space to classroom space is important in terms of a loud, active space compared to a quiet, serious space conducive to learning.

Another important issue is accommodating the fluctuation in population as mentioned in the User/Client Description. Currently the enrollment of each district is declining. The hope is to reverse this trend and bring more families to the area, but it is realistic to expect that this would not happen right away. Therefore, the facility must be able to adjust to this decline until a solution to the population problem is presented. This project is not meant to be the answer to the problem but just a step in the right direction and a prosperous amenity once the growth begins.

Finally, an underlying emphasis will be in redefining what the residents of this area consider their community. Community pride is important in rural areas and just because the towns are losing a component of that pride, the school, does not mean that the community integrity must also die. Citizens instead need to reevaluate the parameters of their community to include more that just each independent town.

VII. Plan for Proceeding

Research will consist of the rural philosophy of education entertained in these communities. This will include study of development of classroom spaces that best accommodate the education of students in the intended class sizes. It will also be crucial to investigate methods of design for the many different spaces required within a school such as the library, cafeteria, and others.

Study of surrounding areas and characteristics, familiar shapes and forms is necessary to create a building that will have a positive response to the site. I hope to incorporate abstractions or interpretations of these features in the design to give a familiar feeling but modern

architectural approach to the project. I would like to provide something new and refreshing for the people and the area without making it imposing and completely foreign.

I feel it will be necessary to incorporate a number of design strategies to produce a successful and comprehensive design. In the beginning stages of the design process a literature search and interviews will be of value. Various forms of literature will help in understanding educational philosophies that will influence the shape and configuration of the spaces. Respecting how the different spaces are used by the people of this specific region will be invaluable in creating a design that will please the users on a functional and aesthetic level. This information can be obtained by interviewing the different user groups. Case studies will be employed to better understand the successes and failures of previous projects with a similar goal. Finally, for layout purposes an interaction net design method will help to outline important space and function relationships. The consideration and combination of the findings of each method will drive the final design solution

Schedule

FALL SEMESTER 2004

Week 1: October 4-8
October 7 *Thesis Proposal Due*
Educational Philosophy and Site Research

Week 2: October 11-15
October 14 *Critic preference slips due to main office*
Educational Philosophy and Site Research

Week 3: October 18-22
October 21 *Primary and Secondary Critics announced*
Educational Philosophy and Site Research
Establish contact with Primary and Secondary Critic

Week 4: October 25-29
October 26 *Meet with Primary Critic*
October 28 *Last day of AR/LA 561*
Educational Philosophy and Site Research

Week 5: November 1-5
November 1 *Spring Registration*
November 2 *Meet with Secondary Critic*
Educational Philosophy and Site Research
Format Program

APPENDIX C: *Design Thesis Proposal*

Week 6: November 8-12
November 9 *Meet with Primary Critic*
November 11 *Veterans' Day Holiday*
Organize Site Research
Work on Draft Thesis Program

Week 7: November 15-19
November 16 *Meet with Secondary Critic*
November 15-19 *Final week of AR/LA 571*
Organize Educational Philosophy Data
Work on Draft Thesis Program

Week 8: November 22-26
November 22 *Meet with Primary Critic*
November 24 *Draft Thesis Program due to Primary Critic (1 copy)*
November 25-26 *Thanksgiving Holiday; Conduct User Interviews*
Educational Philosophy and Site Research

Week 9: November 29-December 3
November 30 *Meet with Primary Critic to review Draft Thesis Program*
December 1 *Meet with Secondary Critic to review Draft Thesis Program*
Finalize Thesis Program

Week 10: December 6-10
December 9 *Final Thesis Program due to Primary Critic (1 copy)*
December 10 *Last day of classes*
Finalize Thesis Program

Week 11: December 13-17
December 13-17 *Final Examinations*

Week 12: December 20-24
Context and Form Research

Week 13: December 27-31
Interaction Net Research

Week 14: January 3-7
Interaction Net Research

APPENDIX C: *Design Thesis Proposal*

SPRING SEMESTER 2005

Week 15: January 10-14
January 11 *Classes Begin*
January 13 *Meet with Primary Critic*
Begin conceptual and schematic design work; meet with Julie Rokke of YHR
Identify potential form-givers from program

Week 16: January 17-21
January 17 *Martin Luther King, Jr. Holiday*
January 18 *Meet with Secondary Critic*
Complete base map and site analysis

Week 17: January 24-28
January 25 *Meet with Primary Critic*
Study site relationships
Continue conceptual and schematic design work

Week 18: January 31-February 4
February 1 *Meet with Secondary Critic*
Apply interaction net research to space and structure planning

Week 19: February 7-11
F*ebruary 8* *Meet with Primary Critic*
Apply form and context research
Study massing models

Week 20: February 14-18
February 15 *Meet with Secondary Critic*
Relationships in vertical section; circulation resolved
Character sketches

Week 21: February 21-25
February 21 *President's Day Holiday*
February 22 *Meet with Primary Critic*
Materials and elevation studies

Week 22: February 28-March 4
February 29 *Meet with Secondary Critic*
Wall Sections and detailed material studies complete

Week 23: March 7-11
March 7-11 *Mid-semester Thesis Reviews*
Educational Philosophy and Site Research

Week 24: March 14-18
February 14-18 *Spring Break*
Catch up on tasks where behind

Week 25: March 21-25
March 22 *Meet with Primary Critic*
March 25 *Easter Holiday*
Readdress site/context issues
Structure/HVAC layouts

Week 26: March 28-April 1
March 28 *Easter Holiday*
March 29 *Meet with Secondary Critic*
Interior space studies
Does project convey original design intentions?

Week 27: April 4-8
April 5 *Meet with Primary Critic*
April 7 *Meet with Secondary Critic*
Storyboard of final presentation
Decide on medium and materials and begin final models, boards

Week 28: April 11-15
April 12 *Meet Primary Critic*
April 14 *Meet with Secondary Critic*
Begin final presentation work; models and boards

Week 29: April 18-22
April 19 *Meet Primary Critic*
April 21 *Meet with Secondary Critic*
Finalize presentation work; models and boards
Begin Thesis Review Presentation

Week 30: April 25-29
April 25 *Thesis Projects due to Memorial Union Ballroom at 4:30pm*
April 26-27 *Annual Thesis Exhibit in Memorial Union Ballroom*
April 28-29 *Final Thesis Reviews; Draft Thesis Document due to Primary Critic*
Thesis Review Presentation

Week 31: May 2-6
May 2-5 *Final Thesis Reviews*
May 6 *Last day of classes*

Week 32: May 9-13

May 9-13	*Final Examinations*
May 12	*Final Thesis Document due to main office at 4:30pm*
May 13	***GRADUATE!!***

VIII. Previous Studio Experience

2nd YEAR, FALL 2001 Philippe D'Anjou
Skull of Lucy Exhibit
Bozeman Mountain Retreat
Copenhagen School of Architecture

3rd YEAR, FALL 2002 Carol Prafcke
Ronald McDonald House
Bayliner Implement

4th YEAR, FALL 2003 Cindy Urness, Mark Barnhouse
Brian Dougan, Joshua Walter
Fargo Urban Design

5th YEAR, FALL 2004 Steve Martens
Valley City Historical Preservation

2nd YEAR, SPRING 2002 Vince Hatlen
Atomic Coffee
Prairie Green-Sustainable Design
College of Business Administration
Lachine Canal Bridge

3rd YEAR, SPRING 2003 Steve Martens
Fluid Motion Center
Great Plains Research Center

4th YEAR, SPRING 2004 Frank Kratky
Don Faulkner
Medium Density Housing
San Francisco High Rise

IX. Reference List/Resources

BOOKS

Books on education and architectural design will be utilized. This section to be expanded during spring semester.

TEXT BOOKS

Allen, Edward, & Iano, Joseph. (2002). The Architect's Studio Companion (3rd ed.). New York: John Wiley & Sons, Inc.
Bassler, Bruce. (Ed.). (2000). Architectural Graphic Standards: Student Edition (9th ed.). New York: John Wiley & Sons, Inc.
Hatlen, Vince. Design Methods Manual. Fargo: Faculty Development Institute, North Dakota State University.

APPENDIX C: *Design Thesis Proposal*

GOVERNMENT DOCUMENTS

U.S. Department of Agriculture. (1984). Soil Survey of Gregory County, South Dakota.

JOURNALS/NEWSPAPERS

Journals and newspapers will be researched for articles relating to advancement in the design of educational facilities, education in rural communities, and consolidation of schools. Case studies from such articles may be used.

INDIVIDUALS/INTERVIEWS

Armstrong, Alan. Colome School District CEO. Colome, SD
Broome, Jack. Burke High School Superintendent. Burke, SD
Fisher, Mary. Winner High School Superintendent. Winner, SD
Nicholas, David. Gregory High School Superintendent. Gregory, SD
Rokke, Julie. YHR Partners. Moorhead, MN
Toliver, Jess. Bonesteel-Fairfax High School Superintendent. Bonesteel, SD

ORGANIZATIONS

Burke School Board
Colome School Board
Gregory School Board
National Education Association

INTERNET

http://eric.uoregon.edu/trends_issues/organization/selected_abstracts/research.html
http://www.alvordteachers.org/Features/Ratio.htm
http://www.digitaljournalist.org/issue0307/gl07.html
http://www.ed.gov/offices/OESE/ClassSize/index.html
http://www.educationvoters.org/research_page.htm
http://www.fedstats.gov/qf/states/46/46123.html
http://www.mapathon.com/sd.html
http://www.nea.org/
http://www.schooltree.org/
http://www.mapathon.com/sd.html

LEAH ARMSTRONG

Having reached this point in my life, there are a few people I feel I must thank:

John Anderson, my wonderful fiance, I would not have wanted to do it without you. We know one another better than anyone else and still you amaze me every day with your giving, gracious heart and your carefree spirit. Thank you for being there for me even when I was not fun to be around.

My parents, whom I truly could not have done it without, your support of my every move is something I value every day. Every day I understand a little more, all the ways in which you sacrifice for my happiness and wellbeing. I could only hope to be as great a person as either of you. Thank you for teaching me the value of hard work, it is a lesson that has placed me in the position I am in today.

Mark Barnhouse, my primary thesis critic, I have never learned so much or felt so satisfied with a project as I have with my thesis. This satisfaction comes from knowing I pushed that extra distance to find a deeper meaning in what I was doing. Realization is a great feeling and I have come to realize a number of things about architecture, my family and my life throughout the course of this project. Thank you for pushing me toward better things.

My studiomates, thanks for teaching me how to teach myself and for setting such high standards of excellence. Thank you all for being a part of the best time of my life!