

Review of:

**Two Building Scheme
Presented to the State College Area School District
Board of School Directors
By David Paterno**



Prepared by:

State College Area School District
L. Robert Kimball and Associates
Poole Anderson Construction, LLC

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1) Introduction

The State College Area School District appreciates the efforts that David Paterno and his group of volunteers expended in preparing their materials. The school district has long understood and agrees that a combination of community involvement, input of students, faculty, staff, and administrators, and the expert advice of experienced professionals in school design and construction are necessary for an effective school construction project. The district approach to planning efforts has long reflected this belief; the high school project could not have matured without the work and involvement of many participants.

The materials presented by Mr. Paterno are a return to a scheme that was reviewed in 2005 and found to be less effective in meeting the objectives for the high school project. These objectives, which are a result of the thinking of faculty, staff, community members, administrators, and board members have guided the project. As the district plan was developed, a number of key factors resulted in the improved, unified 9-12 high school project. The years spent on developing the high school project have yielded an effective, coherent plan.

- This report points out the most problematic issues and identifies once again the limitations of the two building approach. These design shortcomings are not new and were evident in the concepts developed in 2005.
- This report illustrates again the reasons for moving from two buildings with one very long bridge to a unified, well organized, efficiently structured, and up-to-date high school building.

2) Executive Summary

The two building scheme presented to the Board of School Directors is similar, yet inferior to, the “A-scenario” plans reviewed during a public hearing in April of 2005. Those plans also projected a cost savings, but were neither favored by the Board nor the community, due to the many limitations they presented. The two building scheme reviewed in this report contains, and in some cases exacerbates, the limitations of those early studied solutions.

Project Objectives

Prior to any solution being selected, nine project objectives were developed through cooperative input of the staff, students, community, and Board of School Directors. The State College Area School District project successfully accomplishes the identified objectives and outperforms the two building scheme.

Site

The two building scheme grossly misrepresents the extent of the treatment required for site conditions. Costs will certainly rise to meet even the minimum requirements of regulatory approvals. Equally disturbing is the realization that without substantial changes, the building would flood and traffic congestion would continue or increase.

Organization

The band-aid approach to a bridge will ensure that it is not used, or the school day will need to be increased to allow for additional time at class changes. The plan focuses primarily on mechanical upgrades, which are sorely needed; however, it ignores substantial deficiencies in the existing building spaces. The two building scheme is short sighted and ensures that many of the deficiencies of the current campus will be perpetuated for generations to come.

Cost

The costs attributed to this scheme were assigned with faulty logic. Additionally, many costs were either ignored or underestimated. This scheme will not save \$30 million.

Construction

This scheme is risky in its assessment of the construction period. Many students will be adversely affected if this scheme were adopted. Unlike the State College Area School District plan, the two building scheme would require a multitude of classroom trailers during the construction period. Additionally, due to the number of spaces to be renovated and the extent of the work required, interfaces between construction and education would be increased. Finally, the approved project minimizes the long-term impact on education by using the existing buildings, intact, during the first eighteen months of construction. Conversely, the two building scheme would require immediate and extended coexistence of construction and education. This scheme will lengthen and magnify the daily exposure of students to construction.

Conclusion

The current success of a two building high school is achieved through the hard work of a dedicated administration and faculty. This success occurs despite the building configuration. A single high school Building will better support the curriculum, students, and staff. This successful strategy of a single, unified high school is by far the most common educational alignment in the country. The State College Area School District plan was created as a response to many concerns raised during the evaluation of a two building scheme originally recommended in the District Wide Master Plan. As the attached report details, the current project is more successful in meeting both the short-term and long-term needs of the students, staff, and community.

3) The Nine Project Objectives – Program analysis

The SCAHS staff, department coordinators, and administration met throughout the spring and fall of 2004 to develop a draft of the SCASD Project Objectives. Interested community members, CAC for Facilities, and the SCASD Board reviewed and supported the nine project objectives. Throughout the planning process the SCASD Project Objectives have stood the test of time resulting in an effective, coherent plan. This plan provides the foundation for the successful achievement of the SCASD Project Objectives.

Objective 1: To provide a safe, secure, healthy, and comfortable environment for student learning

The project successfully addresses the administrative management of the building by providing four offices strategically located throughout the building. The administrative offices are listed below:

- An administrative office is located at the front entrance
- An assistant principal's office is located at the East corridor, first level
- An assistant principal's office is located on Main Street, second level
- An assistant principal and the CTC director are located at the student bus entrance, third level

The SCASD Project also addresses a systematic entrance and exit security system similar to systems in place at our newest elementary schools and the renovated PFMS. The students will no longer need to spend additional time crossing two parking lots and Westerly Parkway to move to a class. The plan also eliminates the need to cross these areas in poor weather conditions. The main hallways will be larger resulting in an improved atmosphere for staff and student movement. Restroom facilities will be increased and updated.

While the entire building will present a comfortable learning environment, two examples are provided below:

- The Culinary Arts Program has a combined classroom and lab with restaurant equipment, a separate teacher office, and a restroom as required by law. The facility also has a separate dry storage area, technology for instruction and conference needs, and a point of sale system. A student run restaurant/conference center with seating for 72 will provide authentic career experiences. The instructional space can accommodate 20 students.
- The Marketing Program will have a classroom that seats 26 students. The design includes a separate Roar Store office and workroom as well as storage rooms. The student run Roar Store will have double the square footage space, a security system, integrated display cases, and more floor space for merchandising displays, again providing authentic career experiences. The proximity issue is significant in that the Roar Store will be located on Main Street near Chatters Café, the Student Center, the library, and the auditorium.

One final, short-term element demonstrates the significance of a comfortable environment during the phasing plan. The SCASD Project enables the new wing of the high school to be completed in time to house a new phase of renovated classrooms. The 55 newly constructed classrooms will be available for use in the completed new wing prior to any renovation work. This phasing plan accommodates all scheduling needs for students.

Objective 2: To provide student centered spaces

The Student Center is designed to provide several seating alternatives for lunch in a comfortable environment, with modernized food service delivery. The Student Center will also be used for meetings, instructional seminars, technology presentations, banquets, dances, and other planned student and staff activities.

The two dedicated Large Group Instruction rooms will be used for seminars, study halls, technology activities, and student theater activities. The square footage of the band room is increased from 2,235 to 4,000 to properly accommodate the large number of instrumental students. Students will also have additional space for band instrument storage and practice rooms. The Auditorium will seat 1300 people and provide two additional large group instruction areas. The additional seating will provide opportunities for academic and extracurricular large group activities. A comparison of Pennsylvania High Schools with similar characteristics is listed below:

<u>School District</u>	<u># Students</u>	<u>Size of Auditorium</u>
Cumberland Valley	2600	1700
Norristown Area	2200	2000
North Penn	3420	2000
Parkland	3170	1500

Finally, there are six seminar rooms located throughout the building to support the small schools initiative.

Objective 3: To provide sufficient space to accommodate the functions of the facility

The SCASD Project addresses the adjacency requests so significant to staff and students. The plan provides the relevant positioning of department classrooms and the department relationships to other departments. Each department will have an office space for teachers adjacent to the department classrooms.

The SCASD Project addresses the academic master schedule matrix need of interchanging classroom space in English, Math, Social Studies, and World Language. Each of these department spaces is designed to provide consistent value added improvements. The project also provides for state of the art science lab space consisting

of 20 lab rooms with 1300 square feet per classroom as compared to the 970 to 1000 square feet in most of the present science classrooms.

Learning Enrichment, Journalism, and English as a Second Language space has been increased and designed for the instructional needs of each program. Special education classes are in dedicated rooms designed by the teachers associated with each of the student groups needing special assistance.

The Career and Technical Center is provided with space that enables each program to successfully achieve the objectives identified by each particular advisory group. Some examples of the many recognized improvements are listed below:

- The Child Care Program has a separate classroom to seat 21 high school students and a separate Child Care lab with a fenced outdoor play area.
- Public Safety is designed to house a combined classroom and laboratory with desk seating for 16, lab table seating for 16, a separate teacher office, a 911 training center, a lockable storage room for large training equipment, a storage room for uniforms, and fire fighting gear.
- The Travel and Tourism Program will have a classroom that seats 20 students. The design includes a separate hotel desk and a guest room training area.
- The Automotive Technology classroom will seat 18 students. The lab will house four work bays and one wash bay. The teacher station, the customer check in center, the outdoor storage, and the secured outdoor storage for customer and training vehicles will provide a realistic work experience for each student. Proper lighting, proper air pressure, and cubicles for student clothing are included.
- The Ag Science classroom will seat 16. The lab will provide instructional areas for ag mechanics, small engines, construction, welding, bio diesel, animal science, and horticulture. A “smart” greenhouse with a sales area and indoor and outdoor storage areas is provided.
- The Building Trades Program classroom is designed to house 16 students at special worktables. The facility also houses a teacher workstation, three distinct work and storage spaces, mezzanine storage, and an outdoor storage building for large equipment.

Objective 4: To improve the organization of the campus and buildings

The SCASD Project directly addresses the systematic design for all department areas and supportive program areas. The horizontal and vertical adjacency plan provides for less travel time between classes resulting in more instructional time each day. Over 2,520 minutes of instructional time will be added to the school year for each high school student, without lengthening the school day.

The staff was involved in making adjacency decisions as well as space design decisions related to their particular department areas. Each academic department has been placed in

planned adjacency to provide a relevant scheduling of space throughout the building. One example of the successful proximity is the Physical Education area that is adjacent to all of the facility space associated with the program.

Objective 5: To create a flexible facility that can accommodate change

A consistent theme throughout the SCASD Project is the notion of the inclusion of flexible space to assist us in achieving our present and future objectives. Some examples are listed below:

- The proximity of the library to English and social studies classrooms, special education classrooms, and community access is apparent.
- English, social studies, math and world language classrooms are designed to be interchangeable.
- The science classrooms are designed to provide a sharing component within the department and with the Technology Education Department.
- The Student Center provides a series of related spaces for lunch, study, seminars, banquets, and dances.
- The auditorium provides a quality theater opportunity for the students. The supportive space includes a costume lab, practice rooms, a makeup room, dressing rooms, and a scene shop.
- The fine arts areas provide for space that enhances the instructional program.
- Physical education/athletic spaces provide a flexibility that addresses the various needs in a successful and creative instructional and athletic program.

Objective 6: To integrate technology into the facility

A technology subcommittee consisting of a representative group of educators worked with the staff to create a consistent approach to addressing instructional and operational needs. The technology subcommittee and staff addressed the following issues:

- Provisions for inclusion of modern instructional equipment
- Updated communication systems
- Strategic location of the teacher station to control computer, projector, and communication systems, including phone and intercom
- Technology to enhance safety and security measures
- Infrastructure for technology, including wireless access throughout the building

Objective 7: To upgrade the physical operation and appearance of the facility, while incorporating features and components that promote environmental responsibility

The SCASD Project will bring all of the operational systems of the building up to current code. The building will be air-conditioned and wireless technology will be utilized throughout. The architects have planned a visually pleasing building that will offer an attractive aesthetic from Westerly Parkway and Atherton Street. State of the art technology will be used to optimize the temperature control for maximum comfort along with energy conservation. New lighting will improve the learning environment while conserving electricity. Covered bike parking along with easy access to bike routes will encourage a reduction in driving for both staff and students.

Objective 8: To provide appropriate outdoor support facilities

The SCASD Project provides instructional spaces in the outdoor areas of the campus. The campus provides the following:

- The Science Greenhouse is connected to a Biology classroom.
- Outdoor opportunities for science instruction are provided.
- A greenhouse and areas for outdoor instruction are provided for the Ag Science program.
- The Automotive Technology program will have access to outdoor space for automotive testing and touch up activities.
- Ag Science, Automotive Technology, Building Trades, and Public Safety will have access to an outside storage shed.
- A Child Care playground area is located adjacent to the Child Care facility.
- Courtyards will be used for passive and active instructional spaces.
- The Band will have access to additional practice space.
- The Athletic space is available on the North and South sides of the campus.
- The northern addition to the building provides access to needed services such as shelter and restrooms that are currently lacking on Community Field.

Objective 9: To accommodate and manage the community's use of the facility

The SCASD Project will utilize Main Street throughout the facility as an organizing factor for community use. The community will be provided with parking, handicapped accessibility, and easy access to the following areas:

- The auditorium and its support space
- The fine arts space
- The large group instruction space
- The library
- The CTC space (Roar Store, Shops, Child Care, and Business)
- The Student Center
- The gymnasiums
- The wrestling room
- The fitness center

The integrated design also enhances security by allowing the evening activities to be separated from other areas of the building.

4) Site Issues

Traffic

The current bus and parent drop-off circulation patterns are intertwined with one another. This results in traffic delays and backups not only on the North and South sites, but also on Westerly Parkway. Any proposed solution to this current situation must consider efficiency of traffic flows, vehicular and pedestrian safety, and emergency vehicle access.

The SCASD Project solves the current traffic issues:

- Parents are provided with a curbside drop-off zone at the Westerly Parkway entry to the school.
- Buses have a completely separate drop-off zone on the north side of the school at the entry adjacent to the Career and Technology Center.
- A new entry/exit drive aligned with O'Bryan Lane will provide efficient vehicular access to the North site and a new traffic signal at that intersection will facilitate smooth traffic flow.
- An in-depth traffic study has concluded that the SCAHS Project successfully handles the traffic flows generated by the High School as well as the traffic along the Westerly Parkway and the adjacent local streets.
- The current traffic congestion that occurs daily between the North and South sites will be alleviated.
- Emergency vehicle access to the site on both the north and south sides of the building is accommodated and fire lanes are provided immediately adjacent to the building in accordance with Borough requirements.
- Service and delivery vehicle access to the building is fully addressed.

The two building scheme is deficient in the following:

- There is no change or improvement to the traffic circulation patterns; therefore, no separation of parent/student traffic from bus traffic is provided. Traffic delays and backups will continue to occur.
- The PA Department of Education design recommendation for separation of traffic has not been addressed.
- Driveways from both the North and South sites entering onto the Westerly Parkway remain offset from one another. Inefficiency of traffic flows and safety of vehicles entering/exiting the site has not been addressed.
- Fire lanes and emergency vehicle access to the site are not addressed.
- Large truck deliveries are not accommodated. Deliveries by smaller vehicles are not identified. It is unclear if the needed provisions for trash, recycling, food service, mail, etc. are adequately addressed.

Storm Water

Study of the current storm water management issues and an understanding of why these issues occur are critical in developing an effective and responsible design solution. One of the important areas to be addressed is the area outside the band room. A low point in the existing grades in this area results in flooding of the building during larger storm events.

The SCASD Project solves this problem both in the architectural design as well as the site design:

- Architecturally, the addition is moved further away from Westerly Parkway and the floor elevation is raised. This design facilitates the site grading solution.
- The new site grading solution effectively utilizes overland sheet flow in conjunction with storm water inlets/piping to direct storm drainage away from the building and convey drainage to the storm water detention facilities.
- Areas of trapped water are eliminated.

The two building scheme is deficient in the following:

- No solution to address flooding is presented in the scheme.
- The addition extends toward Westerly Parkway. The floor elevation of the western portion will be two to three feet below the existing grades of the adjacent lawn and drive.
- The low point (area of trapped water) in the lawn area adjacent to this addition remains unresolved.
- The scheme will rely on storm water inlets to drain the low points rather than also utilizing overland sheet flow to direct water away from the building. With the history of flooding in this area, it is risky to ignore utilization of overland sheet flow and rely solely on underground drainage.
- The building additions result in an overall increase in impervious area. In order to comply with the Borough land development ordinance requirements, increased storm water detention would need to be provided. Facilities to detain storm water and the costs associated with this are significantly underestimated.

5) Circulation and Organizational Issues

Campus Design

The State College Area High School is a 9-12 curriculum housed in buildings originally designed to function as separate schools. The two building scheme perpetuates this inherent conflict between form and function. It addresses the abstract space needs of the high school but neglects the underlying organizational requirements for the buildings to support, and not hinder, the delivery of the curriculum.

The SCASD Project resolves this inherent conflict by creating a facility that is in harmony with the proven curriculum. One building for one high school. This will create an integrated 9-12 grade configuration that is a tried and true organization model for a high school.

The SCASD Project provides for collaboration of staff, opportunity to share resources, and efficiency of movement. It simplifies school access and site circulation. It creates a safer and more secure environment by eliminating the movement between buildings. It will create a singular identity for the school.

The two building scheme, like the two building concepts developed by the district in 2004, presents deficiencies in safety and security, organization, and distances between spaces. The district lives with these shortcomings and their impact on the delivery of curriculum with the existing buildings. The two building scheme proposes improvements to the existing building mechanical systems but is hamstrung by the inherent limitations of a two building configuration.

The report indicates that the need for students to cross the street will be eliminated altogether through the inclusion of a bridge over the parkway. The two building scheme provides no changes in the parking arrangements; therefore student parking remains on the south site. The report does not address the scenario of students parking on the south site and walking to the north building. There are no provisions to prevent these students from crossing the Parkway instead of using the bridge.

A bridge was considered during the campus design phase of the high school project but was understood to have limitations and concerns. Increased time for class changes due to the increased distance, enforcement of use, and supervision are all concerns. Any two building plan is limited by the separation of the buildings and the number of students and staff moving between them.

The bridge in the two building scheme is over 800 feet long. Such a bridge would be similar to the distance in the North Building from the Natatorium to the 2000 classroom wing and would be four times the length of the South Building ramp. An enclosed bridge would need to be at least heated and ventilated. It would require a public address system and emergency exits with associated stair towers.

Spanning the length of two and half football fields, a corridor without offices and classrooms would be difficult, at best, to supervise.

A two building high school requires a compromise in the arrangement of programs or expensive duplication. In the existing high school, programs such as Music and World Languages exist in only one of the two buildings. Other programs are split between the buildings making it difficult for departments to share resources and collaborate. The two building scheme provides no apparent consolidation of academic departments. This was a priority for all but one of the 36 individual departments during program interviews in the fall of 2004.

The two building scheme increases long travel distances required between classes. While personal fitness is important for students and staff, the time required to make such treks has an impact on the delivery of education. Students are challenged to arrive on time to their next classes. They have little, if any, time to visit a restroom or go to their locker. Students end up carrying numerous books in large heavy backpacks. The disruption to education created by a very dispersed campus is perpetuated in the two building scheme. Due to the increased travel distances created, time would have to be added for class changes.

6) Comparative Design Analysis

The following is a comparative design analysis of the SCASD Project and the two building scheme. While the two are disparate in their development, general design features can be compared. Design detail that is incomplete, unclear, or undeveloped in the two building scheme is largely immaterial. The following analysis focuses mainly on the numerous intrinsic and significant design shortcomings of the two building scheme that could not be corrected, either easily or at all, with a similar two building concept.

These design shortcomings are not new and were in fact evident in the two building concepts developed by the district in 2004 and 2005. The two building scheme is a version of those earlier concepts and verifies the kinds of limitations inherent in two building schemes.

SCAHS Project-	Two building scheme-
<p>Provides a single 1300 seat Auditorium. Features include:</p> <ul style="list-style-type: none"> • full accessibility; including Orchestra Pit, Stage, and Control Room • ability to convene two classes at once (in addition to existing Main Gymnasium) • integrated Acoustical Shell • Orchestra Pit • enlarged Stage with side stage space • adjacent Stage Storage at same floor elevation • capacity would be similar to both existing auditoriums combined 	<p>Maintains current North Building and South Building Auditoriums. Limitations include:</p> <ul style="list-style-type: none"> • would require work (not shown) to provide accessibility for the Stage and Control Room at both locations • no single space for two classes to convene (other than existing Main Gymnasium) • no Orchestra Pit in either location • existing Stage would remain undersized in both locations • no Stage Storage in either location indicated • capacity would be reduced to meet current code seat spacing requirements in both locations • South Auditorium would remain remote from the other performance and practice spaces – difficult to share equipment or integrate activities

SCAHS Project-	Two building scheme-
<p>Provides Large Group Instruction (LGI). Features include:</p> <ul style="list-style-type: none"> • located close to Auditorium, Band Room and Choral Room – easy to share equipment and integrate activities • located on main building circulation • shared Control Room with TV Studio 	<p>Provides Large Group Instruction (LGI): Limitations include:</p> <ul style="list-style-type: none"> • located at different floor from Auditorium and Band Room – difficult to share equipment or integrate activities • located remotely from building entrance • (TV Studio not indicated)
<p>Provides dedicated Scene Lab. Features include:</p> <ul style="list-style-type: none"> • direct access to Stage and exterior vehicular access without stairs or ramps • separated from Stage, Band Room, and Choral Room for sound • approximately 20 foot high ceiling 	<p>Provides dedicated Scene Lab. Limitations include:</p> <ul style="list-style-type: none"> • Shop is at different level than Stage – no direct exterior vehicular access • not separated from Stage, Band Room, or Choral Room for sound • approximately 10 foot high ceiling required by Choral Room above
<p>Provides a new Band Room. Features include:</p> <ul style="list-style-type: none"> • same level access to Stage, Choral Room, LGI, and Practice Rooms – easy to share equipment and integrate activities • approximately 20 foot high ceiling • separated from Scene Shop for sound 	<p>Provides a new Band Room. Limitations include:</p> <ul style="list-style-type: none"> • at different level than Stage and different floor from Choral Room, LGI, and Practice Rooms – difficult to share equipment and integrate activities • approximately 10 foot high ceiling required by Practice Rooms above • located directly next to Scene Shop
<p>Provides a new Choral Room. Features include:</p> <ul style="list-style-type: none"> • same level access to Stage and Band Room – easy to share equipment and integrate activities • separated from Scene Shop for sound 	<p>Provides a new Choral Room. Limitations include:</p> <ul style="list-style-type: none"> • at different floor than Stage and Band Room – difficult to share equipment and integrate activities • located directly above Scene Shop

SCAHS Project-	Two building scheme-
<p>Provides new Performing Arts Spaces. Features include:</p> <ul style="list-style-type: none"> • Costume Lab located close to Stage and Make-up/Dressing Rooms • Practice Rooms located next to Music Classroom, Music Office, and Band Room • Band Storage located close to exterior • Instrument Storage is integrated into Band Room layout • Outdoor band practice area is located on the North site 	<p>Provides new Performing Arts Spaces. Limitations include:</p> <ul style="list-style-type: none"> • Costume Lab is remote from Make-up/Dressing Rooms – Stage is remote and on a different level • Practice Rooms located on different floor from Music Office and Band Room (Music Classroom not indicated) • Band Storage located remotely from exterior • Instrument Storage is not integrated into Band Room layout • Outdoor band practice area remains located across Westerly Parkway on the South site, creating the need for students to carry instruments across the road, many times after dark
<p>Provides PE/Athletics improvements. Features include:</p> <ul style="list-style-type: none"> • entrances for Gymnasiums and Auditorium are separated and made more visible and easy to get to by the new addition being located further from the parkway • new, larger Sports Medicine suite with improved access to exterior and Nursing suite • new Fitness Center with integrated restrooms/locker rooms 	<p>Maintains many existing PE/Athletics elements. Limitations include:</p> <ul style="list-style-type: none"> • entrances for Gymnasiums and Auditorium are unchanged and are made more remote from parking areas by the new addition being built out towards the parkway • Sport Medicine suite unchanged and remote from exterior and Nursing suite • satellite Fitness Center without integrated restrooms/locker rooms

SCAHS Project-	Two building scheme-
<p>Provides CTC improvements. Features include:</p> <ul style="list-style-type: none"> • provides new CTC and Tech Ed program spaces and organizes them in a common area • new Ag, Auto, and Building Trades spaces • Public Safety located next to Health Professions in CTC area • Child Care Lab and outdoor play area located for direct access from public • Marketing Lab with integrated Student Store – located for access for entire student body 	<p>Maintains many existing CTC elements. Limitations include:</p> <ul style="list-style-type: none"> • maintains many inadequate existing CTC spaces – no improvement to organization – new spaces are located wherever they fit • existing Ag, Auto, and Building Trades spaces appear to be reused – no indication of correction to the accessibility concerns in that part of the building • Public Safety located in PE/Athletic area – remote from other CTC spaces • Child Care Lab and outdoor play area not located/provided for direct access from public • Marketing Lab and Student Store not indicated – would only be easily accessible to the half of the student body in the North Building
<p>Provides general building improvements. Features include:</p> <ul style="list-style-type: none"> • new regulation size fourth Gymnasium located with other PE/Athletic areas • new Fitness Center located in front of building for easy morning/evening access and is close to other PE/Athletic areas • second floor LGI is fully accessible and easy to get to • loading dock serves general building needs and Kitchens for large deliveries 	<p>Maintains many building elements. Limitations include:</p> <ul style="list-style-type: none"> • upper Gymnasium (existing Fitness Center) returned to court use – existing space is approximately 30% smaller than regulation • new main Fitness Center (approximately half the size of the existing space) remains remote from other PE/Athletic areas – no easy morning/evening access • existing LGI (230) is inaccessible (improvements are indicated) and remote • no access to building, district, and CTC Kitchens for large deliveries – building Kitchen is not enlarged nor has a serving area

The following items are not addressed in the North Building illustration of the two building scheme. While they could be corrected or added, they would increase the size of the scheme and therefore; cost.

- Science Labs – existing spaces are small and ill proportioned
- Art Rooms – existing spaces are eliminated, new spaces provided are undersized
- Staff or Departmental offices – spaces are indicated in the South Building but not in the North Building
- Departmental and General Storage spaces
- Main Data Room and IDF's
- Custodial Office/Receiving – existing space is eliminated
- Music/Keyboard Classroom not included in Music area
- Expanded Mechanical Space(s) for new equipment such as A/C and sprinklers
- No access to Kitchen for large deliveries

7) Cost Analysis

The two building scheme cost estimate does not fully address the following items:

Site work

The 1.3 million dollars included for site work in the two building scheme is dramatically low for a project of this magnitude. It is evident that inadequate consideration was given to the following:

- **Storm Water Management** - In the SCASD Project, much thought has gone into determining the best solution to alleviate current storm water issues on the North site. Based on the lack of a site development plan in the two building scheme, it appears that the addition of the space near the current North Auditorium without any apparent change in building floor elevations is creating a "storm water bottleneck" regarding the removal of storm water from the site. It is not clear how and where this will be dealt with. Additional costs are inevitable in order to make this work properly.
- **Micro piles** – Based on the geotechnical work completed, the additions proposed in the two building scheme will require the use of micro piles in some locations. This cost is not included in the estimate.
- **Site Circulation/Site Logistics** - The two building scheme does not show any site circulation plan or construction logistic areas, i.e., locations for construction trailers, lay down areas for material and equipment, temporary roads for circulation of material and equipment around the site, etc. Such areas will need to be available and will need to be repaired to be usable by the District upon completion of the work. This cost is not represented in the site work cost.
- **Site Disturbance** - The two building scheme does not directly show the amount of area that will be disturbed in the actual construction of the additions and utility modifications. Such areas will need to be repaired upon completion of the work. This cost is not represented in the site work cost.

Demolition

The demolition cost provided in the two building scheme is very low based on the following:

- **Type of Demolition** - The demolition numbers presented for the SCASD Project reflect a large percentage of mass demolition in comparison to selective demolition (as required for the existing space renovations and mechanical upgrades indicated in the two building scheme). Mass demolition costs less on a square foot basis than the highly selective demolition required in the two building

scheme plan; therefore, the actual overall demolition cost per square foot required to accomplish the two building scheme will be much higher than is currently shown.

- **Demolition Quantity** - For an extensive renovation of a building the size of the South Building, it is unrealistic to assume that a mere 2,656 square feet, or only about 1%, will be involved in demolition.
- **Demolition Efficiency** - The scattered and invasive nature of the work being performed in two building scheme will not allow contractors the space required to efficiently demolish and remove materials from the buildings and site. There will be cost associated with this inefficiency.

Bridge

The enclosed bridge assembly crossing Westerly Parkway is not fully detailed and there will be further cost implications as the design is evaluated in more detail. Based on the length shown, current code regulations will require the bridge in the two building scheme to have additional stair towers and other features for safety, security, egress and handicap accessibility. These features will certainly affect the overall cost. These factors are not included in the two building scheme estimate.

Temporary Provisions

The SCASD Project uses new construction and the South High School during renovations to eliminate the need for temporary classroom facilities.

The cost for temporary facilities in the two building scheme is incredibly unrealistic and will not represent the cost required to provide the temporary spaces required to carry out the two building renovation. Due to the lack of swing-space, the two building scheme will require a significant number of transitional modular classrooms and spaces to house students during construction. This large grouping of modular facilities will take up large portions of the sites and will need to be purchased or leased, delivered, installed, powered, connected to data lines and made handicap accessible. This will require additional paving, pathways, ramps, stairs and security measures.

Constructability Cost

The nature of the scattered two building scheme will reduce the efficiency of the construction process due to the inconsistent flow of work across the spaces and across the street. Trade crews will not be as easily able to move their crews between locations due to the type of work that is available in the space at that time. This will cause the project costs to increase as contractors lack the continuity to keep their crews working continuously on the project.

Summary

While the two building scheme is still in the conceptual phase, it is obviously deficient in many areas of analyzing costs. To call the scheme a \$30 million dollar savings is both dubious and misleading.

8) Demographic Analysis

‘State College is a growing community and we must plan for that growth’ was a comment frequently made as the district met with various groups 1997. The District heard these concerns and commissioned an additional demographic study for the Elementary School Master Plan. This report projected static enrollment for the foreseeable future. This projection was often greeted with doubt at public meetings. However the facts speak otherwise:

Enrollment in 1997/98 – 7,373

Enrollment in 2006/07 – 7,247

Explanation of Demographic Trend

Demographers have consistently pointed towards the growth in housing being balanced by a sustained decline in birth rates.

Another mitigating factor may be that aggressive development is displacing affordable housing (the types of housing that often generate K-12 student population). This has been recently highlighted by the front page headline of the Centre Daily Times on January 28, 2007 reading “Housing needs spill over.” The article went on to report that many families that are looking for affordable housing are moving out of Centre County. To add to this phenomenon, road improvements, which are hastening development and growth, are also facilitating this migration.

Further analysis supports this as a long term trend rather than an anomaly. To illustrate this point, consider the tremendous growth in the Centre Region during the past 30 years. As significant as this growth has been, it has had little impact on K-12 student enrollment:

Enrollment in 1975/76 – 7,744

Enrollment in 2006/07 – 7,247

Current Projections

In 2003, as the district considered a High School project, the board asked ‘With the continued growth in State College, how will the High School be impacted?’ Again a demographer (Dr. Shelby Stewman) was hired to augment the demographic work already performed for the school district. The resulting report found that for the predictable future, enrollments in State College Area School District are forecast to remain stable. The board authorized a High School project shortly after receiving this report.

Recommendations and Conclusion of the two building scheme

The two building scheme offers 3 recommendations and a conclusion regarding demographics, each of which seem to offer little added value. Each recommendation is paraphrased below with an analysis.

- **1-Hire another demographer**
Analysis-The district maintains demographic information from a variety of sources. Beyond the standard demographic evaluations, the district has twice commissioned additional demographic reports to augment this information. Two independent, qualified professionals completed these reports and reached similar conclusions.

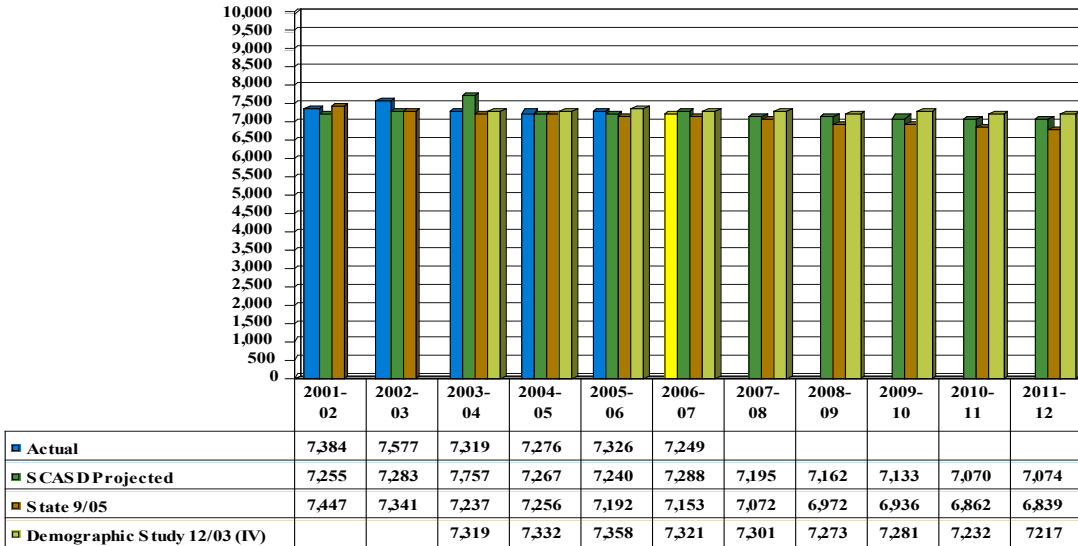
- **2-Target neighborhood sampling**
Analysis-This was a recommendation from Dr. Shelby Stewman to evaluate elementary school distribution, not high school enrollment.

- **3-Develop a simple program to track enrollment and compare accuracy**
Analysis-The district frequently reviews its various sources of demographic projections and compares accuracy. One of the charts, used during budget deliberations, is offered at the end of this section as an example.

- In the conclusion of the two building scheme, it is stated “demographics cannot accurately predict the long-range future.”
Analysis-If this is the case, one might ask: ‘then how is any planning valid?’ The district contends that appropriate use of demographic information is critical to planning.

Summary

The State College Area School District has used numerous methods and studies to review the demographic impact on schools. These various reports have been very accurate and the district will continue to analyze demographic trends on a regular basis.



9) Phasing and Construction Logistics

Phasing

Project phasing is one of the most important parts of any project on the high school campus; but oddly, it is not addressed in the two building scheme. Due to the magnitude of the renovations occurring in both buildings, the ability to separate construction and education will be greatly compromised.

The scheme is promoted as less complicated than the SCAHS Project, but it is far more complicated. The SCASD project consolidates construction areas for maximum benefit, while the two building scheme shows work in numerous areas, appearing to address different sections of different buildings all at the same time. This will result in either a more "move-intensive" phasing plan or an extended schedule, both of which will highly affect the educational use of both facilities.

- **Incremental Moves** - The chosen SCASD Project uses completed new spaces to help offset the transition of existing spaces to renovation work. This allows for reduced relocation of staff and students, creating a consistency to allow staff and students to get accustomed to locations without frequent changes. Due to the lack of swing-space, the two building scheme will have to use multiple modular classrooms and make frequent moves during a single semester to accomplish the work, forcing staff and students to have to endure many more relocations of spaces and classes.
- **Street Crossings** -During construction in order to account for the more intensive work on existing spaces in the two building scheme, it is possible that Grades 9 and 10 will need to move to the North building and Grades 10 and 11 to the South building more frequently to take advantage of available space. If so this will greatly increase the cross-street traffic. This increase in cross-street traffic will create conflicts with construction traffic and operations.

Educational Spaces During Construction

The SCASD Project has a logical and minimalist approach to the movement of educational spaces in the construction project, with no moves during the first 18-month period. The multiple areas under concurrent construction in the two building scheme will be problematic for consistent educational use of the buildings.

- **Modular Classrooms** - In order to complete the two building scheme, numerous modular facilities will be required. These modular spaces would work effectively as temporary spaces for standard classrooms, but provide little or no provisions for specialized areas such as CTC or science usage. Customizing the spaces for such uses would limit the use of the modular space for other standard uses, and will require additional modular spaces to be installed, both of which would be at

an additional cost to an already strikingly low two building scheme cost for such facilities.

- **Multiple Moves** - These trailers would have to change in usage often to accommodate the intensive, frequently shifting, renovation work outlined in the two building scheme. This will require MULTIPLE moves for staff and students per single semester and a higher level of involvement of the faculty and staff to coordinate student movement and relocation of classes on a regular basis.

Construction Logistics

It is difficult to determine exactly how the two building scheme is intended to be carried out, but some issues are very apparent, regardless of the chosen method of execution. These include the increased conflict between educational and construction traffic, accommodating bus and parent drop off, site circulation, internal building circulation, access of emergency vehicles, maintaining appropriate building egress and preserving a comfortable environment for education.

- **Construction Operations** - The two building scheme does not give a specific area that will be used as a construction staging area. Construction staging for the two building scheme would either need to be adjacent to work occurring on both sides of the parkway or separate staging areas located at each building. Either of these choices will put great strains on availability and use of parking lots and athletic fields. Other schools undergoing such a renovation have eliminated student parking during the construction period.
- **Temporary Partitions and Separation of Construction Zones** - The nature of the two building scheme with many portions of the North and South building under renovation at various times, will require an even greater need for temporary partitions to properly separate construction and educational activity. This will have cost and usage impacts and the space for educational usage will be CONSTANTLY changing.
- **Efficiency of the Work** - The SCASD Project has the work segmented to allow for a natural workflow for contractors. The two building scheme plan has work occurring in many areas at various times. This will not allow contractors to efficiently sequence their work in a straightforward progression. A non-uniform flow of the work will cause mobilization issues and add cost due to the work having to start and stop repeatedly for trade and prime contractors.

- **Building Utility Operations** - The SCASD Project pays special attention to directing the work to allow for the fewest interruptions. The two building scheme causes issues with being able to keep utilities functioning, due to the divided plan of work. This will add additional cost to the two building scheme.
- **Duration of the Project** - In the SCASD Project, the schedule has been developed to allow the maximum amount of work to be done with the fewest changes to the educational spaces, within time frames that are reasonable and maximize contractor efficiencies. There is no indication of the time frame required in the two building scheme plan for completion.

Summary

Due to the invasive nature of the renovation requirements in the two building scheme, education will be adversely affected. Large numbers of modular classrooms will be required and many construction work areas will be adjacent to educational spaces.

10) Conclusion

This report is a review of the information provided regarding a two building scheme for the High School renovation project. Due to the extensive study of this type of scheme during the High School project development, many of the limitations should be evident to those familiar with the project.

The established objectives for the High School project are better accomplished by the current plan than by the two building scheme.

The two building scheme is inadequate in treatment of site related problems.

The campus plan in the two building scheme is poorly organized.

The two building scheme will not save \$30 million.

Construction will have a more invasive impact on education under the two building scheme.

This scheme presents nothing new. The needs of the High School have been established and balanced against the financial implications of this and other solutions.

The years spent on developing the high school project have yielded an effective, coherent plan. This unified, well organized, efficiently structured, and up-to-date high school building will be an asset to the State College community for years to come.