Appendix 3: Modern Delivery of Education: Regarding SCASD Facility Decisions

This appendix is a literature review that supports statements in the body of the document on the following topics: school size and enrollment issues, "choice" in public education, and modern educational facility design issues. It includes the following sections:

I. Introduction
II. The School Size Debate
    a. Enrollment Issues
    b. Local Considerations and the Small School Initiative
III. School Choice and Flexibility
IV. Modern Trends in School Design
    a. Safety issues
    b. Physical Environment
    c. Designing Modern Learning Environments
V. Conclusion

I. Introduction:

"Smaller, more autonomous, flexible, and accountable schools should characterize education in the next century" (Rotherham, 1999)

After examining educational research, literature, and local information, the team concluded that the current SCASD proposed single-building high school design is actually a move toward the "factory model" of delivering education. This model is not broadly recommended in the literature and inhibits our ability to quickly adapt to future changes in the modern delivery of education – which includes smaller learning environments, expansion of innovative district school choices such as magnet and charter schools, and flexible project-based, learning spaces. We found that many recommended design features in terms of safety and physical environment, comfort, and technology could be easily accommodated in both the SCASD plan and in the alternative plan.

II. The School Size Debate:

Even though some would argue that State High is already too big, the two-building design – which houses students in developmentally appropriate and culturally distinct smaller units - may serve as a protective factor offsetting the negative effects of our large-enrollment high school. Judging from the current literature and research on the topic, taking away that protective factor of two separate buildings seems imprudent.

In 1959,"The American High School Today" (Conant) was an influential book that sparked a movement toward consolidating smaller schools into large high schools. The rationale was that larger schools could provide a more diverse curriculum and economic efficiency (Duke & Trautvetter, 2001). While both of these supposed benefits have not been fully supported by modern research (Cotton, 1996), the large comprehensive high school (often referred to now as the "factory" model or "warehouse" school) has dominated our nation's educational system for the past 40 to 50 years.

Researchers are beginning to question the comprehensive large high school since it often fails to produce a high quality of education for all students (Duke & Trautvetter, 2001; Stevenson, 2002). Abundant research over the past two decades indicates that smaller schools consistently outperform larger schools in terms of academic achievement (Cotton, 1996; Raywid, 1999) and offering a safer environment (Raywid and Oshiyama, 2000). Research results are so abundantly clear that one researcher who reviewed over one hundred studies on the subject wrote that the relationship between small schools and positive educational outcomes has been "confirmed with a clarity and at a level of confidence rare in the annals of educational research" (Raywid, 1999).

Education professionals and other stakeholders also prefer small schools. The results from a well-respected survey found that U.S. parents overwhelmingly favor smaller schools – only 2 percent said they preferred schools with enrollments over 2000 (Rose and Gallup, 1998). The U.S. Department of Education outlines a "Smaller Learning Communities Program" that shows the need to develop smaller learning environments in large comprehensive high schools (U.S. Department of Education, 2006). Small schools have also been encouraged and supported by the Public Education Association, The Education Commission of the States, and the National Association of Secondary School Principals, as well (Duke & Trautvetter, 2001). In addition, several foundations have established financial support for helping large comprehensive schools form smaller learning communities (Duke & Trautvetter, 2001; Cunningham, 2003; American Architectural Foundation and KnowledgeWorks, 2006).

2a. Enrollment Issues:

It should be noted that researchers' definitions of small and large are often varied. Broadly, most define "small" 9-12 grade high school enrollments as being between 400-900 and large enrollments as being between 1000-1500 students. While none of the research can adequately measure what size would be appropriate for all school districts, some do offer guidelines. For instance, researchers claimed that the greatest negative effects of large schools were found in high schools enrolling more than 2100 students (Lee & Smith, 1997). Lee and Smith (1997) further proclaim that the optimal size would be between 600-900 students for a 9-12 grade high school. Others use qualitative descriptions to say that high schools should be:

> "Small enough so that people can know one another. Small enough so that individuals are missed when they are absent. Small enough so that the participation of all students is needed. Small enough to permit considerable overlap in the rosters from one class to another. Small enough so that the full faculty can sit around a table together and discuss serious questions. Small enough to permit the flexibility essential to institutional responsiveness – to the special needs of individuals and to the diverse ways teachers want to teach." (Raywid and Oshiyama 2000, p. 446).

Others state that there is no magic number for schools and that each district must look at a variety of factors such as the socio-economic make up of the student body and other local variables (Slate & Jones, 2005; AAF & KnowledgWorks Foundation, 2006).

2b. Local Considerations and the Small Schools Initiative:

"Any attempt to improve on a system that already works is pointless and may even be detrimental" (Titelman, 1996)

Our current 9-12 grade enrollment is almost 2700 – which is quite large; but our high school is paradoxically, quite successful. We are fortunate to have a relatively high percentage of middle-class students in a suburban setting, which is strongly correlated to academic success (Cotton, 1996) . However, one overlooked possible cause for our success is that we have not historically been the "typical" large factory school: **we have had a rather unique situation of smaller learning communities in the North and South Buildings all along- and this current configuration and delivery of education has proven to be quite successful for us.** Large schools all over the country are attempting to "personalize" their schools by offering a variety of "fixes" for the large comprehensive high school building. In many cases, this personalization is done with advisory groups, small schools initiatives, or "schools-within-schools." Programs like these are often meant to personalize big schools *in the event that there is not the money or political will to physically break up a large high school into smaller buildings or separate high schools* (Duke & Trautvetter, 2001; Stevenson, 2006; AAF/KnowlegeWorks, 2006; AIA, 2006). **We already have smaller buildings!**

But while we operate as two smaller learning communities, we do technically have a "large" school in terms of enrollment number. During the Act 34 Hearing, we heard anecdotal information from parents who felt that their kids were not functioning well in this high school because of its enrollment size. The SCASD presentation to parents in October 2005 regarding the small Schools Initiative shows a March 2002 ACT Evaluation Survey and a "Small Schools Data Report" from Spring of 2002 indicating that our high school students are not feeling connected to teachers and their school community (SCASD, 2005). This presentation further recommends a small schools initiative with the following objectives: 1) "eliminate the alienation some of our students experience" and 2) "improve the connectedness among students, the school and their teachers." (SCASD, 2005). Deliberately placing all of the students together in one building is likely to exacerbate any "large school" problems the high school may have now. Certainly, the team fails to see how making a "bigger pond" for 2700 kids (who may already feel alienated and like "small fish") could in any way help to "personalize" our current functionally "smaller" schools.

Further exacerbating this problem, SCASD's one-building school will not have any "houses" at all (like a ninth grade wing, etc.) and is organized by department for administrative convenience. This will create an environment of even more anonymity and less "overlap" for the kids who will not be organized by any sort of grouping within the larger environment (as they are in the current configuration).

In conclusion, we simply found **that none of the researchers today ever recommend or encourage purposely building a large school for 1500 or more - even in predominately white middle-class districts.** In fact, Howley, Strange and Bickel (2000) write that:

> "Even in affluent communities, schools serving 1500 or more students might have diseconomies of scale and bureaucratic operating modes that are not educationally hospitable. Indeed, a wide consensus seems to have emerged (cf. Fulton, 1996) that schools larger than 1,000 are unwise choices for any community…"

The current configuration of having two buildings housing students in two distinct and developmentally separate units is not only more in line with best educational practices, but moreover, it has proven itself to work quite well for **our** district for over 20 years academically. While our high school currently functions well academically, it could already be too large socially and could benefit from some form of advisory groups and/or small school initiatives – but moving a larger population into one huge building is not going in the right direction. The school board's persistence in going against modern wisdom and building the type of school that top educators now say is outdated and too big, is not only unnecessary – but also seems risky. It also fails to value and appreciate the configuration that is likely to be one of the important reasons for our educational success.

III. School Choice and Flexibility:

> *"The key to successful planning is to provide the most flexible and adaptable spaces possible in our schools."*
> (Stevenson, 2002)

The "one-size-fits-all" method of delivering education has become a thing of the past (Stevenson, 2002). Up until recently, public education has been the main choice and other choices were initiated only when that public system was failing. For instance, magnet schools were created to deal with the problem of segregation. As most schools are placed geographically with local students, it became apparent that this naturally segregated some schools. Magnet schools were therefore developed around a theme to attract students from different neighborhoods so that there would be more diversity. What educators found out was that these schools work well – for everyone (U.S. Department of Education, 2004).

The same history is true of charter schools - which came about in areas where the public system was failing. Now, charter schools are thought to be a choice rather than a "fix." We have a great example here in our area of the Young Scholars Charter School that focuses on teaching K-5 grade students several years of intensive languages -including Chinese. It was not developed because SCASD is deficient or not up to par. In fact, SCASD is one of the best school districts in Pennsylvania. It is offered in our district to provide an alternative that better suits a certain subset of the whole population.

As these and other opportunities for "choice" increase - as is predicted (Stevenson, 2002), the school district could be faced with a problem if the single large building actually makes it hard to navigate and adapt to these new opportunities. Since our school district loses operating funds when a charter school is offered, the district could be left with a large building with less money to support it and fewer students than are needed to appropriately fill such a large space. Conversely, SCASD may decide to not offer valuable magnet schools at other locations just in order to keep the appropriate capacity at the large high school.

A facility should not limit a district's ability to take advantage of new innovations and possibilities. The large SCASD building is cumbersome and makes us less able to quickly take advantage of new opportunities and adjust to shifts in enrollment.

IV. Modern Trends in School Design

Educators have become aware that the physical surroundings and design features of school facilities have a substantial impact on student performance. These variables can be broadly categorized by 1) Safety, 2) Physical Qualities and 3) New Learning Methods and Technology.

4a. Safety Issues:

Recent tragic events in schools across the nation have caused a growing awareness of safety in our schools. Our own school district has recently approved spending for controlling the access into all its schools with a "buzzer" system. This involves a call-button at the door of the main entrance and a camera so that office personnel can see the visitor and "buzz" them in (e.g. unlock the door so they can enter). The other doors then remain locked from the outside and are "emergency-only" exits.

The board's one-building plan will have two main entrances with an office and buzzer system located at each. The two-building alternative plan will also have two main entrances with adjacent offices and buzzer systems at each - along with monitored entrances to each side of the pedestrian bridge. The main office at both buildings will be relocated to the main entrance. Like all other district buildings, other entrances will be locked during the school day.

The main purpose of this controlled entry is securing the building from an armed intruder or other person intending harm. While this is a very important consideration, it is also a rather rare event. A student – not a strange intruder, has caused most of the notorious school shootings in the past decade. Because of this rarity, schools should make an effort to balance the need to address this potential problem with a feeling of openness at the school so that it doesn't feel like a prison to the students, but still offers security (Patton, 2006). One of the most important ways to create this balance is to create smaller schools to begin with so that a stranger is more readily noticed (Bingler, et al., 2003).

There are other safety issues besides preventing the rare intruder, however. The main cause of violence in schools is from the students themselves and this violence is more likely in bigger schools (Cotton, 1996; Raywid and Oshiyama, 2000).

> *"…In the wake of the Columbine High School shootings, Education Secretary Richard Riley convened a panel of school security experts. Their top recommendation had nothing to do with gun control or metal detectors. Rather, panel members said, the most effective response to school violence is to reduce the size of the nation's schools."* (Mitchell, 2000)

Research has found that smaller schools can provide: a safer, more challenging and positive environment, higher achievement, higher graduation rates, and fewer discipline problems (Nathan & Febey, 2001). The anonymity and alienation that large schools often have is reduced when schools are broken into smaller units (Bingler, et al, 2003, Lackney & Long, 2006).

> "Furthermore, we must face the underlying consequences of designing large institutional school facilities that isolate our students on a daily basis. Impersonal institutions require significant investments in security while minimizing the very community it seeks to protect." (Lackney & Long, 2006, p. 2).

Other safety issues for consideration involve the ease of evacuating a building in the event of a fire or other emergency. One should consider that in the event of evacuation, suddenly having 2700 kids outside presents a simple crowd control issue and will require thoughtful planning to ensure that the evacuation itself does not cause potential harm.

The other consideration for controlling a crisis is that right now, if there were to be an armed intruder, an unstable student with a gun, a fire, a gas leak or other emergency, the emergency would be limited to one building – only putting 1300 kids at risk rather than all 2700. In terms of the risk exposure, this makes a difference knowing that one building full of students is not affected by the threat (e.g. smoke inhalation, etc.). Also, when in a crisis in one building, we could send the evacuated students to the unaffected building for safety, comfort, and control rather than having 2700 students standing outside in parking lots, etc.

One other safety issue specific to our district has been that students have had to cross the street to go back and forth between buildings to take classes. This issue has sometimes been used to justify the one-building design. In our plan we do add a covered walkway and bridge over the Parkway to eliminate having to cross the street. The controlled access to the building will limit student travel to the bridge. In addition, we have reorganized some of the spaces and grade-based versus discipline-based learning configurations in both buildings to reduce the total amount of crossing that is even currently needed.

4b. Physical Environment:
Because we know more about how the learning environment affects a students' ability to learn, we must look at any major investment in renovation as an opportunity to make major improvements to that environment including everything from heating and air conditioning to the aesthetic interior spaces that students will spend their time in (AAF/KnowlegeWorks, 2006; Lackney, 2006; Schneider, 2002).

The two-building design proposal recommends replacement and/or complete upgrades to all electrical, air ventilation, and heating systems. We recommend adding air conditioning to all building areas and adding natural light to rooms without natural light through the use of skylights in some cases and in some areas without good natural light, we make different use of the space so that it is not used for instruction.

All asbestos will be removed from both buildings – which would need to occur in a similar manner in either our plan or the SCASD plan. All surfaces will be updated and some areas will be slightly modified to improve accessibility and appearance to the same degree that the architect (Kimball) specifies for the existing 1950's classrooms in the one-building SCASD plan.

Any noted deficiencies or problems would be addressed immediately in our plan - such as flooding in the North Building. The resolution of these issues are "givens" and should be eliminated from consideration in comparing the two designs – since many of these things should be addressed through maintenance, not a new building.[1]

4c. Designing Modern Learning Environments:
The actual physical design of the instructional spaces have traditionally consisted of 800-900 square foot "classrooms" whereby a teacher stands in the front of the room and lectures to roughly 20-25 students. This is most of what is apparent in the Kimball plan and is a classic design for educational spaces. The two-building solution also has the same traditional classrooms.

Two trends have emerged, however, that challenge the efficacy of this traditional method of teaching and learning. These trends are the use of technology (Stevenson, 2002) and the growing awareness that not everyone learns best in the traditional manner (AAF/KnowledgeWorks, 2006). There is a new emphasis on designing buildings to offer flexible spaces for individual self-study (mostly through the use of technology like laptops, etc.) and experiential small-team/project-based learning (AAF/KnowlegeWorks, 2006; Bingler, et al., 2003; Cunningham Group, 2003; Lackney, 2006).

[1] Flooding at the North Building is a site drainage system failure – not a problem related to the age or condition of the building. It can be completely resolved outside of the building and could have been resolved years ago.

WiFi or its equivalent would be almost mandatory (AAF/KnowledgeWorks, 2006) and is included in both the SCASD and our two-building plan. This will introduce a fundamental flexibility to the access/delivery of learning materials and would likely imply a commensurate flexibility in the use of the learning environment space and its subdivision into "rooms." Semi-private spaces for communication among team members and learning partners would be needed rather than large quiet rooms for solitary, and independent study. "Learning takes place in many different kinds and qualities of space. The self-contained classroom can no longer provide the variety of learning settings necessary to successfully facilitate Twenty-first Century learning." (p. 11, Lackney, 2003).

Of course, traditional classrooms are still provided in the Sensible Solution at the same level as the Kimball plan; however, the team adds smaller flexible break-out areas throughout both buildings to ensure that all teachers have access to more flexible spaces for different styles of teaching methods as needed. These spaces could alternatively be used to house faculty support spaces – depending on more input from teachers regarding the educational needs for these flex spaces. In the Kimball plan, some areas do have smaller instructional spaces – but they are department specific and do not appear to be available to all "departments." In the Sensible Solution, the design philosophy of these spaces is that they be available to all teachers as needed and are centrally located to flexibly address the needs at any given time in the life of the building.

In addition to the formal breakout areas, the Sensible Solution also includes a Dedicated Student Center (See Section 4.3 of main report and Appendix 4). Student Centers add enormous benefits in terms of community building, providing a nicely scaled and comfortable meeting area, and offering a project-based learning environment as well (Butin, 2000). In this plan for the North Building, this space is fully equipped for multiple educational and extra-curricular activities. In the South Building, there is a more formalized space for student break out areas. The Kimball plan only lists the 900-seat cafeteria doubling as a "student center."

V. Conclusion:

The SCASD plan is an educationally outdated "factory" model school and is too large to offer a personalized experience for the students. It also makes adjustments to new opportunities and changing enrollments more difficult and expensive.

The Kimball facility is not necessarily safer than a two-building design and brings some new safety concerns to our district in terms of evacuation planning and the impersonal nature of the large enrollment/large-scale school.

There is no evidence in the Kimball design of a dedicated, appropriately scaled Student Center, or flexible project-based learning areas that would be accessible to all departments. Furthermore, there is no educational literature indicating that to incorporate these desirable features in a high school requires the one-building design. A project of this scope and investment should include more modern features to take us into the 21st Century.

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**For further information, the team has provided a copy of the following publication to be reviewed at Schlow Library's Reference Desk:

-"Schools as Centers of Community: A Citizen's Guide for Planning and Design" (National Clearinghouse for Educational Facilities, 2003).