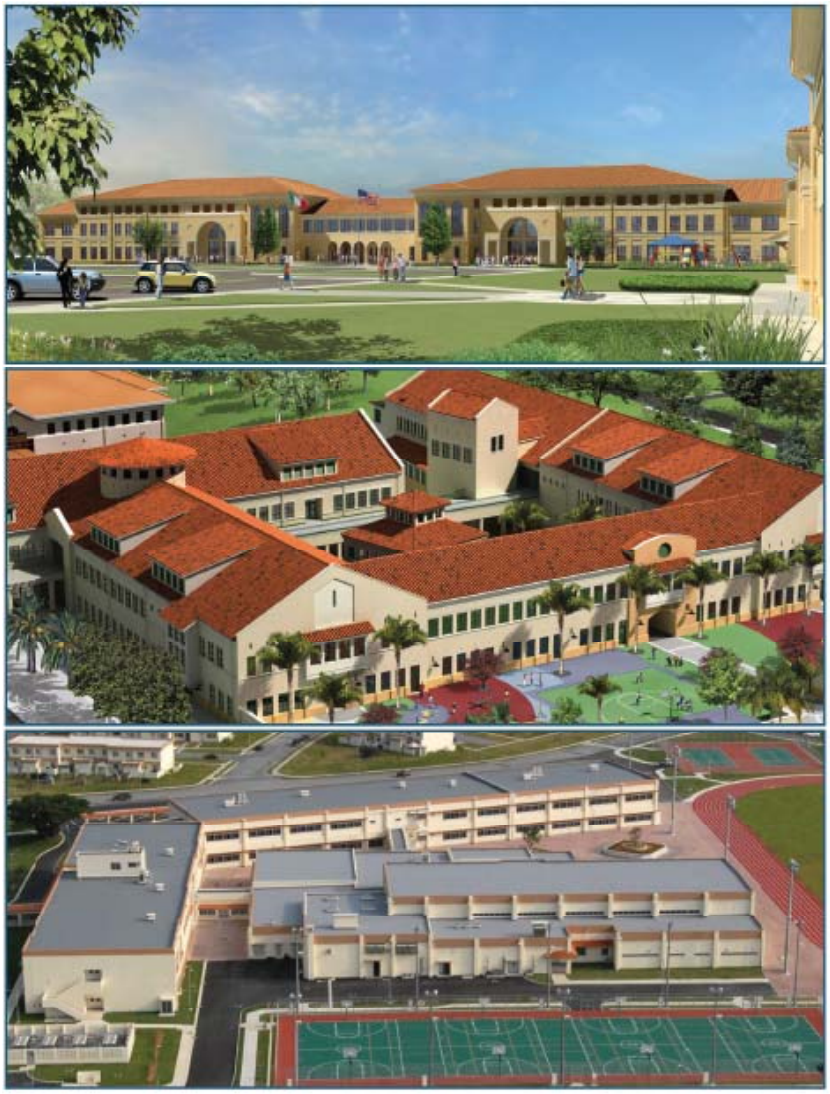

DEPARTMENT OF DEFENSE EDUCATION ACTIVITY

dodea

Report to Congress on the Department of Defense Education Activity's Design Process and Procedures to Provide Outstanding Schools

Evaluation and Documentation of Best Practices,
Design Innovations, and Formal Processes
DoDEA HQ

Cost of Preparation: $28,000 (annotated per SECDEF 16 Aug 10 memo) **September 2010**

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ACRONYMS

ABA	Architectural Barriers Act
A&E	Architecural and Engineering
AED	Automated External Defibrillators
ANSI	American National Standards Institute
ASA	Acoustical Society of America
ASHRAE	American Society of Heating Refrigeration, Air Conditioning Engineers
ASTM	American Society of Testing and Materials
ATFP	Anti-Terrorism Force Protection
BIM	Building Information Modeling
CCTV	Closed Circuit Television
CHPS	Collaborative for High Performance Schools
CPSC	Consumer Product Safety Commission
CPTED	Crime Prevention through Environmental Design
DoD	Department of Defense
DoDEA	Department of Defense Education Activity
DDESS	Domestic Dependent Elementary and Secondary Schools
EdSpecs	Educational Facilities Specifications
EPact	Energy and Policy Act
EO	Executive Order
FF&E	Furniture Fixtures & Equipment
HVAC	Heating Ventilation and Air Conditioning
IT	Information Technology
LEED	Leadership in Energy and Environmental Design
MILCON	Military Construction
NAVFAC	Naval Facilities Engineering Command
NRC	Noise Reduction Coefficient
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers
VOC	Volatile Organic Compound
VOIP	Voice Over Internet Protocol
VTC	Video Teleconferencing

1.0 INTRODUCTION

This report is submitted in response to the Senate Armed Services Committee's request for information pursuant to Senate Report 111-201 to accompany S.3454, the National Defense Authorization Act, 2011. This report requires the Department of Defense Education Activity (DoDEA) to establish a formal process whereby the best practices and design innovations in public and private school construction can be incorporated into the design of DoDEA schools.

The Committee report at pages 252-53 provides:

> ***ITEM OF SPECIAL INTEREST***
>
> ***Design standards for schools of the Department of Defense Education Activity***
>
> *The committee notes that the budget request for fiscal year 2011 and the future years defense program (FYDP) includes a significant increase in the amounts proposed for investment in the replacement of schools maintained and operated by the Department of Defense Education Activity (DODEA). The amount requested in fiscal year 2011 of $439.0 million, is 110 percent greater than the amount proposed for fiscal year 2011 in the FYDP that accompanied the budget request for fiscal year 2010. The amount of over $4.0 billion proposed for investment in the FYDP in the fiscal year 2011 budget request represents an increase of almost $3.6 billion from the fiscal year 2010 FYDP for DODEA. The urgent requirement for additional funding for school facilities was revealed in a study requested by this committee in the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110-181), which assessed the condition of DODEA schools worldwide and the impact of underinvestment of funding for replacements and renovations.*
>
> *The committee strongly supports the Department's commitment to the wide range of family programs that support the spouses and dependents of our military personnel. The committee has received testimony that many of these programs ranging from housing, child care, medical care, and education are major factors in achieving a positive quality of life and the decision of service members to remain in the military, despite the hardships of family separations and a high operations tempo. The committee commends the Secretary of Defense for establishing a priority to ensure the children of our military personnel are provided the best education opportunities in state-of-the-art facilities with the most current technology available. The committee also notes that the environment provided to students by the decisions and priorities established during the facility design process for each new school will have a significant impact on the quality of education and the scholastic experience for children for many years.*
>
> *Noting the substantial amount of design and construction to be accomplished in the next 5 years, the committee directs the Secretary of Defense to establish a formal process whereby the best practices and design innovations in public and private school construction can be incorporated into the design of DODEA schools. The Secretary shall*

ensure that the process encourages the use of sustainable designs, green building systems, acoustics management, student safety/security, and interactive technology to create a positive learning environment for children and an efficient teaching environment for faculty. The process should also determine what is required to provide children with disabilities the full range of education opportunities and to ensure these requirements are incorporated into each design. Finally, the process should ensure that the facility design will be able to easily adapt and respond to emerging requirements related to dynamic curricula and new teaching techniques and incorporate the feedback of teachers, parents, military community representatives, and local school administrators.

The committee directs the Secretary of Defense to provide this committee with a report not later than September 30, 2010, on the establishment of the process and the procedures adopted to meet the goals to provide outstanding schools for the children of our military personnel.

DoDEA is a Field Activity of the Department of Defense (DoD) with a worldwide scope. Having 194 schools, over 970 permanent buildings and 18 million square feet of building space, it is one of the largest, most diverse, and geographically dispersed school districts serving American students. DoDEA is currently faced with the challenge of replacing or renovating over 130 schools within the next 7 years. The task grows in complexity with DoDEA having schools on 3 continents located in 12 countries, seven states, and the territories of Guam and Puerto Rico. The multiple cultures and diversity in construction practices require DoDEA to be flexible and adapt to best practices in multiple locations. To succeed DoDEA will partner with students, parents, educators, military communities, the DoD Construction Agents, and A&E/construction firms (from various countries). All must collaboratively come together to provide a school that will meet the needs of today and that will incorporate the innovation to satisfy the needs of tomorrow. DoDEA's mission is to provide an exemplary education that inspires and prepares all students for success in a dynamic, global environment. We feel that the design tools we have developed in concert with the continual improvement process will ensure that school facilities provide optimal learning environments that contribute to student achievement and preparation for future challenges.

While the basic school design process employed by DoDEA is time proven to be successful, DoDEA has tools and initiatives in place that enhance this process and will contribute to exceeding the goals desired by the Committee. Foremost among these are:

- DoDEA Education Facility Specifications (EdSpecs) – Though a collaborative process involving educators and engineers we have defined the functional area requirements and provided suggested layouts for all school educational spaces for every grade level.
- Building Information Modeling (BIM) – The EdSpecs for every functional area have been converted into BIM 3D computer modules that provide the flexibility for them to be grouped into school configurations that will comply with location specific requirements or constraints. While the modules provide flexibility, continuity of use in DoDEA schools

will also provide the educational space familiarity and comfort especially important to the transient population we serve.

- DoDEA Design Center – The teaming needed for success also involves the Military construction agents. (DoDEA is not authorized to directly contract design or construction of facilities. Per DoD Directive 4270.5, we will be utilizing the construction agents assigned to designated geographical areas.) Our inclusion of both the United States Army Corps of Engineers (USACE) and the Naval Facilities Engineering Command (NAVFAC) into the Design Center provides continuity of design and construction started with the EdSpecs and continued with the BIM modules. The Design Center contributes much more though with the provision of corporate knowledge and incorporation of continual improvement through lessons learned in our design process.
- Architectural and Engineering Firms – Critical to our success is the need for continuity in the A&E firms who use our EdSpecs and BIM modules to design our schools. Through the Design Center, DoDEA solicited and awarded contracts to five A&E firms selected for both public and private sector school design experience. Collectively they have been a part of 2068 public, 27 private, and 252 DoDEA School Designs or Renovations as well as recipients of 29 awards for professional recognition.

The initiatives highlighted build upon one another to provide both continuity and efficiency in the design process. The synergistic effect of both those mentioned above along with community participants will contribute to educational facilities that not only provide the learning environment desired but the bonding and pride of community especially important to the military. Each initiative above will be discussed in more detail within this report. This report will also address each of the requested design topics to include the use of sustainable designs, green building systems, acoustical management, student safety/security, interactive technology, access for children with disabilities, and flexible/adaptable designs.

2.0 PROCESS

As noted in Section 1, the DoDEA design process has undergone significant enhancements. These initiatives, mentioned above and expanded upon below, will allow DoDEA to efficiently manage budgeted resources in order to provide state-of-the-art facilities for the dependents of our military personnel.

Education Facility Specifications (EdSpecs)

DoDEA initially published EdSpecs in January 2005. Revised DoDEA EdSpecs were published in July 2010. The EdSpecs address site planning, general building design, functional areas, infrastructure, and system requirements. Each of the functional areas in a school where student and educational staff interaction occur is addressed. Details in the EdSpecs include the total size, a description of general use areas, a suggested layout, and outfitting requirements. Attachment 3 is the EdSpecs for an Elementary School general purpose classroom and provides an example of the content and detail included for each functional area. The specifications will help DoDEA address facility and classroom educational/curriculum needs and more easily convey these requirements to dedicated US Architect-Engineer firms. Especially important is our ability to more easily convey these requirements to foreign A&E fits in overseas locations where DoDEA-contracted A&E firms cannot be utilized due to US-host nation agreements. DoDEA EdSpecs will continue to be revised in order to accommodate emerging requirements related to dynamic curricula and new teaching techniques, or as a result of lessons learned from feedback received from engineers, A&E firms, teachers, parents, military community representatives, and local school administrators.

DoDEA Design Center

In 2008, DoDEA collaborated with the U. S. Army Corps of Engineers (USACE) to establish a Design Center at the USACE Norfolk District. The Norfolk District was selected due to its proximity to DoDEA Headquarters, technical skills, and existing capacity. Since activation, the Norfolk Design Center has aggressively supported DoDEA with personnel, technical resources, and contracting capability and expertise. The Design Center provides world-wide support for DoDEA's design and construction program and allows DoDEA greater continuity in planning, design, and construction. Along with HQ USACE, the Design Center coordinates the support of construction elements from the Corps of Engineers Districts as well as that of the Navy Facilities Engineering Command (NAVFAC). NAVFAC was invited to participate as part of the Design Center and accepted the invitation on September 1 2009 (Attachment 1). With inclusion of NAVFAC, DoDEA has achieved project design continuity, through the DoD Construction Agents, that covers all DoDEA locations with the exception of the United Kingdom (United States Air Force controlled). The Design Center, in coordination with HQ DoDEA representatives, will attend selective design meetings to ensure best practices are incorporated to collect lessons learned for application to future projects.

In addition to Construction Agent continuity, the Design Center has assisted in the revision of the DoDEA Educational Facilities Specifications (EdSpecs), contracted DoDEA-dedicated Architect and Engineer (A&E) support as well as conversion of Educational Facilities Specifications functional areas into Building Information Modeling (BIM) components. The Design Center's A&E solicitation required expertise in school design with experience in both the public and private sector. With five firms selected from various regions and climates of the US, DoDEA has captured architectural and systems expertise that can be applied to any DoDEA locations. Through the leadership of the Design Center, the firms are being molded into a collaborative team that will contribute to standardization, streamlined design processes, shared lessons learned, and improved design efficiencies. The Design Center also provides access to the USACE various Centers of Expertise. These also have enabled DoDEA to identify and incorporate industry-wide best practices into DoDEA projects as well as access to large contracts that will improve standardization and decrease construction costs. On a quarterly basis, the Design Center, in collaboration with DoDEA, hosts representatives from each of the A&E firms to discuss relevant program requirements and design innovations. One meeting brought together BIM experts from each of the firms to discuss the ease of use of the EdSpecs BIM models. As a result of this meeting, each of the firms as well as personnel from the Design Center gained a better understanding of differences in application of the BIM models, made suggestions that allowed easier incorporation of the BIM models into whole school design, and shared design practices in the use of BIM design software.

Architect and Engineer (A&E) Design Firms

Identification of a dedicated group of A&E firms has enabled DoDEA to draw upon the selected A&E Firm's combined experience, including that of projects for both private and public school systems. Combined these firms have school experience totaling 2068 public, 27 private, and 252 DoDEA School Design/Renovations. Additionally, they have earned numerous awards for engineering, planning and design as seen in Attachment 2. They each bring to the table best practices, innovation and collective lessons learned from previous projects that shared with others will enable all A&E firms to improve future designs. This strategy benefits DoDEA's program in multiple ways. Having a dedicated group of A&E firms provides sufficient design capacity to support the timely execution of a large program. Since these same A&E firms are continually supporting the program, institutional knowledge is developed, retained, and communicated throughout the design process. These firms have a vested interest in the program which contributes immensely to true partnering. Time and cost savings are realized in both design and construction through the increased accuracy of the construction documents. It has also enabled DoDEA to identify and incorporate industry-wide best practices and design innovations into DoDEA projects. Their experience in public and private school acquisition as well as that gained with US government procurement avenues will improve advertisements for construction contracts using either the design-bid-build or design-build process. Improvement in either process will limit the need for costly construction change orders as well as facilitate acquisition of a better facility at a more economical cost. This will better allow DoDEA to incorporate technology and flexible use into future schools.

Building Information Modeling (BIM)

DoDEA is using BIM technology to literally build a virtual school in a computerized three-dimensional intelligent model. These technologies have allowed Architects to better communicate the design intent to principals, teachers, staff, parents, and community members through improved visualization, and have enhanced coordination between design disciplines earlier in the process. BIM is being used by more and more A&E firms and will be the design environment of the future replacing current two dimensional computer-aided design and drafting (CADD) software. BIM contributes to better design with facilitated collaboration of design disciplines (mechanical, structural, electrical, etc.) and identification of design conflicts which lead to costly change orders or more costly design revision during construction. Using BIM also allows "intelligence" to be incorporated into the building systems, components, and assemblies for potential future use in facilities management and furniture and equipment purchases.

Cyclical Design Process

DoDEA utilizes a cyclical process that allows continual improvement in planning, design, and construction to provide high performing education facilities. This cyclical design process also allows DoDEA to interact with the project delivery team members in every phase of planning, design, and construction. This interaction facilitates the exchange of information among the team members and resolution at the lowest level of conflict or ambiguity between the various agencies overseeing different phases of design or construction. This also ensures the incorporation of lessons learned, best practices, and design innovations on issues such as sustainable designs, green building systems, acoustics management, student safety/security, interactive technology, access for children with disabilities, and flexible/adaptable design. The following sections outline best practice concepts in each of these areas and their implementation within the process. The lessons learned, best practices, and design innovations captured during these phases will directly contribute to improved designs, better educational adequacy, and increased flexibility.

3.0 SUSTAINABLE DESIGNS

Introduction

As defined by the U. S. Environmental Protection Agency, Sustainability "calls for policies and strategies that meet society's present needs without compromising the ability of future generations to meet their own needs."
(http://www.epa.gov/sustainability/basicinfo.htm)

Sustainable products have a lifespan that meets the sustainability goals: they are manufactured in safe and healthy environments, are made of recycled components, can be recycled, and use clean energy in the operation if required. The production, use, and disposal of the products will not harm the environment, health, or deplete resources.

Sustainable Facility Design considers the whole project's impact on the environment, from inception, through its lifespan and its demolition including construction practices, material use, energy consumption, and waste generation.

Design Concepts

All schools will strive to meet applicable DoD and federal mandates. Emphasis will be on energy conservation, providing a conducive learning environment that focuses on daylighting, acoustics, indoor air quality, and establishing a sustainability teaching tool in each school.

Energy Conservation

Energy conservation begins with site development and building orientation. This includes designs for responsible storm water management and water conservation. Additional energy conservation measures will include energy efficient building systems, alternative energy solutions, and onsite renewable energy. New designs will comply with DoD and applicable federal energy conservation goals. Energy modeling will be done during early design stages for each facility to help determine optimum air conditioning and heating system selection.

Schools will be designed to require fundamental commissioning and enhanced commissioning of building systems. Commissioning is the process whereby the building systems are tested in accordance with best practices for energy conservation and sustainable design. Enhanced commissioning requires building component testing and building envelope evaluation for thermal leaks, as well as testing of other building systems. Both these processes lead to energy conservation and utilities cost savings.

Additional energy savings features will be used where appropriate including integrated lighting systems that utilize light level sensors, dimming, appropriate fixture layout, and functional switching. Water conservation measures will be designed into the facilities, and may include automatic lavatory water shut-off devices and low-flow fixtures.

Daylighting

Proper use of indirect daylighting of school classrooms, offices, and other spaces plays an important role in test scores, eye strain reduction, and reduction of absenteeism. Over the past three decades, numerous studies have concluded that diffused, indirect, natural lighting boosts

one's attention, problem solving abilities and general health. Lighting a school solely with electrical fixtures is a significant burden on facility energy costs. DoDEA schools constructed prior to 1970 were constructed with large window walls. During the 1970's windows grew fewer and smaller, and in many cases were covered up because of rising energy costs and their low thermal resistance. While most schools still have classroom windows, they have been reduced in size until they offer little more than a view to the exterior. Significant, quality daylighting in all areas of older DoDEA schools is not available. The application of Sustainable Design principles in new school design will include the introduction of more natural light through energy efficient window systems.

Acoustics

Good acoustical design is especially important in schools, because children do not hear sounds the same way that adults do. Children under 12 have difficulty focusing on a single source of sound in noisy environments. Children also have a smaller vocabulary, and are less likely to be able to "fill in the blank" for words that are not heard in the context of a sentence. Either one of these conditions will cause students to miss content that is being taught.

Acoustically modeling spaces is especially important for large volume spaces such as music rooms, auditoriums, gymnasiums, and cafeterias. BIM technology will enable designers to acoustically model spaces earlier in the design process which will lower the cost and increase the performance of the built environment.

Verifying that what has been built meets the acoustic requirements that were specified (or intended) is also a part of the American National Standards Institute (ANSI) and Acoustical Society of America (ASA) standard. Since acoustics is a very specialized science, and takes specialized instrumentation to measure sound, verification of what has been built as it relates to acoustics is an added cost, and a process that is most often times not performed. This can be specified within the Enhanced Building Commissioning discussed previously in this document.

Assistive listening systems are also addressed in the ANSI standard and are one of the few active systems that can be implemented. These systems consist of mobile microphone/speakers that can assist listening, as well as cut down on voice strain from teachers who spend the majority of their day speaking. These systems should be used in conjunction with the passive strategies above. These systems could be a benefit to all classrooms, and especially for hearing impaired programs.

Indoor Air Quality

Design for indoor air quality may include maximizing building ventilation, pretreatment of outdoor air intake systems, the elimination of environmental noxious odors and installation of detection systems that monitor carbon dioxide levels in the interior air.

Current best practices require construction operations to include an indoor air quality management plan to reduce pollution and contamination of occupants during construction when buildings will be occupied during construction as well as building flush-out after construction, prior to occupancy to reduce indoor air quality problems residual from construction activities.

Designs will specify products that do not contribute to air contamination, that are not odorous, irritating and/or harmful (both installed finish products and furniture/equipment selections).

Air filtration systems will be provided to limit occupant exposure to potentially hazardous particulate and chemical pollutants either from sources within the building or from exterior sources.

Sustainability Teaching Tool

Designing the building to support this tool and coordination with school administrators will allow introduction of the students to living examples of what sustainability is and how it works. This has been used effectively in other school designs and has even been introduced during large renovation or systems replacement projects. Making students aware of the environmental impact of our facilities and how they can impact the future will pay dividends long after they leave our school system. One example of this teaching tool is signage highlighting the materials used in construction, their availability, life cycle, and environmental impact throughout the building's life.

Leadership in Energy and Environmental Design (LEED) for Schools is one of the tools that DoDEA uses. The minimum DoDEA goal is to meet the "Silver Certifiable" level. Due to the global nature of DoDEA, sustainable design must be applied at a higher, universal standard to ensure desired outcomes are realized.

Standards Being Used

- UFC 3-400-01 Energy Conservation
- UFC 4-030-01 Sustainable Development
- Energy Independence and Security Act of 2007 (EISA 2007)
- Energy Policy Act of 2005 (EPact 2005)
- Executive Order 13423 (EO 13423)
- Memorandum of Understanding on Federal Leadership in High Performance and Sustainable buildings
- Federal Leadership in Environmental, Energy, and Economic Performance (EO 13514)

4.0 GREEN BUILDING SYSTEMS

Introduction

There is a significant amount of overlap between green building systems and the sustainable design best practices listed in the previous section. While sustainable design is a summation of design processes and products, green building systems focus on available technologies, materials, and equipment. These systems currently have a rapid development cycle, responding to industry demands for energy conservation, better air quality, and environmental stewardship.

Design Concepts

Schools will seek to incorporate green building systems that are recognized by universal, objective standards. These systems should enhance energy savings, reduce or control air contaminants, and minimize environmental impacts.

Building envelopes will be designed with features that reduce energy consumption and increase the sustainability of the building. These may include high-performance wall construction, windows, sun control devices, air barriers, and green roofs.

Mechanical systems

Building designers will conduct a Life Cycle Cost Analysis to enable them to specify the most efficient and highest quality heating and air conditioning equipment. These systems will include energy saving features such as energy recovery wheels or geothermal systems.

Electrical systems

Lighting systems can become very complex, but have a great potential for energy reduction. Strategies typically involve designing a lighting system around natural daylighting. More natural light in a space will require more ability to adjust the lighting to get the most benefit, but systems can become costly. Simple strategies such as double switching light fixtures allows users to have two different light levels in a given area of a room, and is the least expensive strategy for lighting energy conservation. Complex systems can involve daylight level sensors that automatically dim lights depending on the amount of natural daylight in various parts of the room. Occupancy sensors are also a fairly cost effective strategy to ensure that lights are not left on in a space after everyone has left.

In gymnasiums, fluorescent light fixtures may be considered in lieu of high intensity discharge lamps, because they are dimmable, will turn on immediately, and use approximately the same amount of energy. Depending on the amount of daylight in a gymnasium, fluorescent lights could have a large effect on energy savings. Natural daylighting will still provide the greatest potential for energy savings.

Plumbing

Plumbing fixtures will also be considered as a key energy saving measure. The cost of water and wastewater charges from local utilities is dependent on the energy they consume to deliver the service. By reducing the amount of water and waste used in a building, the burden on local

utilities is lessened. Simple solutions such as “Ultra” low flow lavatories, toilets, and urinals can been specified, helping to achieve water efficiencies. Hard-wired (w/battery back-up) and battery operated faucets with 15-20 second water flow cycles, as well as battery-powered flush valves with automatic sensors and push button backup, work well in most restrooms.

Air Quality Systems

Children are particularly susceptible to air-borne pollutants, and everything should be done to mitigate them in school buildings. Walk-off mats reduce the amount of pollution that makes its way into buildings and built into floor systems so that they are flush with the surfaces around them.

Green certified paints, adhesives, sealants, and carpets are made with low or no VOCs and are readily available and will be specified wherever appropriate.

Particle board and laminates used in the facilities will be specified not to contain urea-formaldehyde, eliminating another potential irritant. High efficiency filters will be specified in the HVAC system to capture more pollutants in the air.

5.0 ACOUSTICS MANAGEMENT

Introduction

Acoustics includes the control of background noise, sound reverberation (echoing), and sound transmittance. Acoustics management is critical to ensure optimal learning environments, because noise pollution affects concentration. Younger children process sounds differently than adults. They have trouble focusing on a single source of sound when other sounds are around them and content is mixed or not heard. They also have a smaller vocabulary and are less likely to be able to "fill in the blank" for words that are not heard in the context of a sentence. Younger children are also more susceptible to hearing damage. Acoustic management is also an important consideration for children with disabilities as discussed further in the Access for Children with Disabilities section elsewhere

The proper acoustical learning environment has been studied in depth and it was determined that children need voice levels to be at 15 decibels (dB) above background noises in order to understand content.

In 1998, the US Access Board joined with the Acoustical Society of America (ASA) to develop classroom acoustics standards. The resulting document is ANSI/ASA S12.60-2002 and is an in depth guide on recommended standards for acoustics in schools. This standard includes recommendations for reverberation times for various size rooms, includes strategies for how to achieve this, and has requirements for minimum surface areas for acoustical treatments in learning spaces. It even goes on to specify maximum sound requirements and fluctuations in sound from mechanical systems, or other systems that buzz, rattle, hiss, and whistle.

Design Concepts

Acoustic designs will follow ANSI/ASA S12.60-2010: American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Permanent Schools which defines criteria for maximum sound levels coming from outside.

Music related programs require special design considerations to provide the optimal learning environment. Additionally, special considerations will be made for acoustic treatments for large spaces including gymnasiums and cafeterias.

Other sound equipment will be considered for certain schools such as active listening systems (mobile microphone and classroom speakers), which are beneficial for hearing impaired programs and are beneficial for all programs to cut down on teacher voice strain. Designs will place particular importance for sensitive learning programs (mild/moderate/severe learning disabilities, hearing impaired programs) due to the special acoustical needs of these students.

In all cases, building enhanced commissioning is required to verify that the spaces perform acoustically in accordance with specified criteria. Designs will utilize an acoustical consultant, experienced in school design, as part of the design team.

Standards Being Used

- ANSI/ASA S12.60-2010: American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Permanent Schools
- LEED for Schools:
    - Minimum acoustic requirements for learning spaces
    - Enhanced acoustic requirements for reduction in background noises beyond the minimum requirements
- ASHRAE standards for controlling sound
- Collaborative for High Performance Schools (CHPS)

6.0 STUDENT SAFETY/SECURITY

Introduction

In today's world, safety and security of school facilities is increasingly important. Threats to dependent school children exist in numerous forms, ranging from safety issues to external and internal security threats.

There are many current guidance criteria already in place that are designed to mitigate threats to student safety and security. DoDEA's Office of Safety and Security, in conjunction with the DoDEA Design Center, identifies and utilizes these criteria within the design process. Established best practices, external threat mitigation innovations, and school community input also contribute to establishment of design parameters.

Design Concepts

A myriad of best practice concepts are incorporated into safety and security design planning, including:

Site layouts

Site layout features address vehicular circulation and separations from pedestrians, playground and play field locations, sheltered area locations, fencing and access control. Close attention is paid to Crime Prevention through Environmental Design (CPTED), elimination of remote or obscured site access points and "hiding" places as well as protective standoff distances are of paramount importance to our processes at this phase. The detailed layouts and construction methods for these areas and systems occurs primarily during design. Site circulation is a key point in post occupancy evaluation, as the Design Center is always adding to the body of knowledge in terms of the balance between ease of circulation, effectiveness of the security/safety, and overall impression of the site flow, particularly during high traffic times of the day.

Anti-terrorism/Force Protection (AT/FP)

AT/FP measures are addressed in the early stages of project planning. Selecting a site that lends itself to passive design of AT/FP criteria reduces costs. AT/FP factors affect the building layout, site circulation, and access to the facility. AT/FP also affects the design decisions of materials and building systems for blast mitigation depending on the threat assessment of the installation.

Playground safety

DoDEA has established a Playground Management Program which incorporates the provisions of the United States Consumer Product Safety Commission Public Playground Safety Handbook, U.S. Access Board Summary of Accessibility Guidelines for Play Areas, and American Society for Testing and Materials (ASTM) standards. In addition, a standard playground design and construction process has been developed with the Design Center.

Building access control

Building access control can be through the use of active components such as special door hardware (key) access, proximity cards or keypad access systems on entry doors, as well as through line of sight visual control of entrances, forced visitor traffic flow and other planning measures. DoDEA employs a wide variety of strategies based upon situational concerns and differing conditions to control access. DoDEA EdSpecs delineate visitor traffic and line of sight entry control which is used in all new facility designs during the Design charrette phase. More specific infrastructural and technology based systems such as Closed Circuit Television (CCTV) systems, intrusion detection and entry access control keypad and proximity card systems are included during detailed design, construction and Furniture, Fixtures and Equipment (FF&E) fit out phases of a project.

Emergency Protective Actions

Emergency Protective Actions include a host of responses, including evacuation, lockdown, shelter-in-place, and "take cover" procedures. DoDEA policy enables classroom teachers to implement an internal lockdown of their classrooms as a "shelter in place" during a threatening situation. Principals possess the ability, through their intercom/telephone systems, to announce a threatening situation and initiate an internal duress lockdown. This requires the ability to protect the classroom envelope through individual classroom lockdown, yet not compromise life-safety and accessibility requirements in the use of appropriate door hardware and the ability of visually obscure line of sight into the classroom itself. This concept is a Design, Construction and FF&E fit-out activity in all new construction for DoDEA schools.

Security systems (CCTV, intrusion detection)

DoDEA policy and procedure varies with regards to a de-facto standard for requirements in this area. Intrusion detection is generally included in new facilities. CCTV systems are used for internal and external threats and are implemented more often in High School and sometimes in Middle School environments as a mischief and crime deterrent tool. These items are discussed beginning in the design charrette phase and fully implemented in the detail design and FF&E phases.

Safe finishes and building appurtenances

Throughout the actual detailed design phase, the A&E teams are cognizant of paying close attention to hard surfaces, wet environments, ventilation and safety systems in higher hazard areas such as art rooms, science classrooms, food service areas, etc. These material, detailed configuration and systems considerations are almost exclusively a detailed design phase activity.

Emergency Preparedness and Natural disasters

Fire, weather, and other safety related issues are primarily an operational concern however; fire alarm, mass notification, and intercom/public address systems implemented during the detailed design, construction, and FF&E fit out phases of project execution are required to support this element of facility safety.

Standards Being Used

The Unified Facilities Criteria (UFC) system supports the planning of DoD facilities and provides guidance on planning, designing, integrating, and finalizing specific protective measures required in a construction project to resist specific design threats. The security engineering UFC series, used in conjunction with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, establishes the minimum security and antiterrorism design criteria that is used in DoDEA school designs.

National Fire Protection Association (NFPA) Life Safety Codes provide minimum requirements to ensure safety to occupants with due regard to function for the design, operation, and maintenance of building and structures.

DoDEA also recognizes and encourages the use of other industry best practices and guidance such as:

- Applying the principles of Crime Prevention Through Environmental Design (CPTED)
- FEMA (Risk Management Series, Publication 428 Primer to Design Safe School Projects in Case of Terrorist Attack dated December 2003)
- National Clearinghouse for Educational Facilities, "Mitigating Hazards in School Facilities"
- NSTA (National Science Teachers Association) Guide to Planning School Science Facilities, and Science Facilities Standards published by the Charles A. Dana Center

Process Implementation

In addition to the Design Center's expertise, DoDEA also receives input regarding student safety and security best practices and design innovations via the Safe Schools Program. The Safe Schools Program was originally developed in partnership with the National Association of Secondary School Principals and enhanced through cooperative efforts with the American School Counselor Association and the International Union of Police Associations. In 1999, DoDEA adopted the program and remains under contract. The program provides research, current safety and security applications, and use of its extensive network of public and private school contacts to provide the DoDEA Office of Safety and Security with best practices, and innovations. The information provided is then evaluated for use in student safety and security design requirements.

Additionally, the Safe School Program provides DoDEA with a means to conduct surveys concerning student safety and security which provides student, teacher, parent, military community representative, and local school administrator feedback.

The DoDEA Office of Safety and Security evaluates best practice and design innovation information with current DoD, Combatant Command, and Service requirements to determine applicability in DoDEA school designs. The specific protective measures derived from best practice and design innovation information is then delivered to the project design team along

with the minimum DoD standards for use and inclusion from the planning charrette through post-occupancy.

While the overarching concepts of safety/security are present throughout the DoDEA design process, several of the processes are heavily emphasized in various phases of the design process, including:

Planning Charrette

This process includes development of the conceptual site plan for the school, including potential vehicular circulation, AT/FP setbacks, and building supporting site layouts. Previously mentioned guidelines are reviewed for implementation.

Design Charrette

Develop site plan to meet AT/FP standards while allowing access for buses, staff, parents, and students whether vehicular or pedestrian in nature. Complete an AT/FP analysis of the site and structure to assure compliance early in the design process. Use the BIM model to allow the administrators to virtually walk through the facility to understand the building's passive security design elements and to begin the development of the active security components that will require further development throughout the design phase.

Design

Active components of the security and access control components of the design are incorporated, including specification of CCTV, proximity card access, keying systems. Develop the landscape plan with passive security measures to meet AT/FP as well as CPTED criteria.

Specify emergency preparedness features including fire sprinkler systems, building egress, fire alarm, and local facility warning systems integrated with installation warning systems. Design Fire Alarm systems to integrate with installation systems. Locate Automated External Defibrillators (AED's) and Fire Alarm pull stations per building codes.

Design and specify safety components for the facility including safe play and athletic areas.

Construction

Verify functionality of all emergency and safety systems as part of the building systems verification included in enhanced commissioning. Verify that systems required are integrated and communicate with the base master emergency systems.

Post-Occupancy

Perform periodic testing of emergency systems in accordance with referenced military standards and civilian codes where applicable. Conduct emergency procedure and egress drills to prepare students and staff. Provide instruction to staff on operation and maintenance of building security and emergency systems.

7.0 INTERACTIVE TECHNOLOGY

Introduction

Interactive technology can be used to help create a positive learning environment for children and an efficient teaching environment for faculty. Design for the future of technology presents unique challenges since the pace of change in the technology exceeds the pace of programming, design, and construction. The obvious answer is to plan for flexibility in the facility and the ability to upgrade. DoDEA, and specifically DDESS, was an original leader in developing campus area and local area networks at their facilities. This cabling and network infrastructure provides access for students and teachers, with all classrooms having Internet access. They will continue to lead the way in the future.

Design Concepts

The goal of Interactive Technology is to maintain the most current available means and methods of utilizing technology to the greatest extent possible. Technology is changing so rapidly that the requirements for integrating technology need to be reviewed carefully with every project. There are limitations in the ability to construct a building with useful flexibility while maintaining physical characteristics needed for classroom spaces and separation of function.

The needs for school age students can vary widely based on the age of the students. Although Elementary Schools, Middle Schools, and High Schools may have some common technologies, they will require different technology tools to achieve their goals. The concepts for implementing these goals require a seamless and intuitive use of current and emerging technologies that foster a positive learning environment for children as well as facilitating faculty use of technology to improve efficiencies for teaching students as well as communicating with students, parents, faculty, administrators, and the public.

The current best practices to be incorporated for the most adaptive use of technology include multiple computers in all classrooms, interactive whiteboards (Smartboards) in all classrooms, projectors and screens in all classrooms, infrastructure support for future IT needs, and wireless access points.

Other enhancements through technology include distance learning through the use of Video Teleconferencing (VTC) and Webcams.

A Television Production and Editing room is included in the Middle School and High School EdSpecs. This program is commonly seen in schools and is a good teaching tool for this type of media.

The Modular Technology Lab that is included in the current High School EdSpecs is another great program that includes workstations that support Automation and Robotics, Electricity and Electronics, Instrumentation and Process Control, and IT. This space is also used for network maintenance and Computer Service and Support programs.

School infrastructure will include criteria for fiber optic cable allowing support for VOIP phone systems (a phone in each classroom) and electronic cardkey lock system for building access.

School Web sites, e-mail, text messaging: for communicating with public/parents/students will include calendar events, emergency announcements.

Internet based grade reporting, chat rooms for evening questions and answers for homework assignments. Other emerging technologies will be considered where appropriate.

Installation of a flat screen TVs with touch screen technology will replace Smartboards and projectors. An improved bandwidth wireless technology infrastructure can provide wireless infrastructure support throughout the school.

Laptops or personal computing devices like the iPad or Tablet PC's for students (possibly leading to electronic school books and assignments, polling and voting features through handhelds) can also be linked to a Smartboard, allowing teachers to get an instant assessment of students' comprehension of a concept. These handheld devices can be used for many subjects including probeware in a science lab, graphing math calculators, or as a research tool in all subjects. Fiber Optic cabling may replace copper wire throughout facilities due to its virtually unlimited bandwidth.

VTC capabilities and implementation allow more consistent support to home-schooled students, to special needs programs, and better access to lessons and distance learning programs.

Cloud computing, providing the students a virtual private network while making a more efficient use of the school's bandwidth will also be considered for the future.

The Design Center, the DoDEA A&E firms, as well as close coordination with DoDEA curriculum specialists and educational leaders will allow DoDEA to provide schools that support both today and in tomorrow's technology requirements.

8.0 ACCESS FOR CHILDREN WITH DISABILITIES

Introduction

When designing a unit for special needs students, access is of utmost importance. Truly accessible design for special needs students, requires that the design meet or exceed the minimum requirements of the Architectural Barriers Act (ABA). Accessibility includes more than physical access to spaces. It includes designs to accommodate sensory impaired and emotionally handicapped students. The "inclusion model" which has been adopted by many school districts for special needs children, will necessitate accommodations for these children that are built into the general classrooms as well as facilities throughout the school. Accessibility also means raising the level of independence of students that have mobility impairments to allow them to experience the full range of the educational curriculum.

Design Concepts

Early planning must identify accessibility goals for special needs students. These include the application of educational plan models. An important consideration is whether there will be an inclusion policy. This can determine the specialized extent of the accommodations in mainstream classrooms and support spaces.

The requirements of the ABA are mandatory and are considered a minimum. These requirements are built into the design process to provide accommodations for those with physical impairments. In addition, school designs must incorporate additional features to address the requirements of special needs students, for example, incorporating features that address the needs of students with sensory awareness issues.

Acoustics/Sound

Design accommodation for students with hearing impaired and sensory awareness issues require that the design respond to their unique concerns. Acoustically well designed spaces will have benefits for all students as studies have shown that students perform better in schools with well designed acoustic environments that minimize noise especially in the larger gathering spaces such as gyms, multipurpose spaces and cafeterias. The level of noise in these spaces can prevent use by some students with sensory awareness issues. A priority will be placed on the acoustic design of these gathering spaces, which can be problematic due to the hard surfaces and large volumes. It is recommended that sound enhancement systems be installed to accommodate mainstreamed students with hearing impairments in classrooms as well as large gathering spaces. These systems have also shown to improve the response of general education students as well.

Lighting Design

Careful consideration is taken when selecting the lighting since direct fluorescent lighting is very harsh and can cause children headaches and can actually induce seizures in children with seizure disorders. Control of the lighting in the classroom can be a useful tool as teachers lower light levels when the children need calming and turn lights up when it's time increase attention for learning.

Playgrounds/Playfields

Recess is a very significant part of the day for any child but for a child with special needs it is more so. Many children with disabilities need movement to help calm them; often times its how they regulate their behavior. Children in wheelchairs don't often get the chance to explore movement so they do not get the benefit of movement. Every effort should be made to provide them with appropriate movement. Swinging can be very calming for children as it helps them organize their sensory systems.

Moderate disabilities

Activities of daily living are important developmentally. As special needs students get older it is important to teach daily living skills. These skills will require the design of accessible household spaces such as kitchens, bedroom, and laundry. These may be dual use spaces that may have other functions in high school levels. Focus would be on the preparation for more independent living. Attachment 4 is the EdSpecs for a High School Learning Impaired (Severe) classroom. This attachment provides an example of how DoDEA is addressing the needs of these students. Needs that we recognize will change as their environments change.

Speech/Language Therapy

In this therapy room, acoustics are a special concern to provide a conducive environment for therapy. Sound attenuating walls should be made to provide complete acoustical separation from other adjacent rooms.

9.0 FLEXIBLE/ADAPTABLE DESIGN

Introduction

The ability for learning spaces to be able to adapt to changing teaching/learning styles, to adapt to changing technologies, and be flexible enough to accommodate multiple functions while still perfectly serving the originally intended uses is the ultimate goal of good educational facility design. Within any one type of curriculum, variables will change from day to day, and the versatility of a single space to accommodate the changes is ideal.

Educators will continue to have varying teaching styles, and children will continue to have differing learning styles. Classrooms are shifting from a single focus (lecture) style that was used in the industrial era, to a more collaborative and technologically based learning space more conducive to the information age. Students are more connected than ever before.

DoDEA recognizes these changes and is continuing to collaborate with their pool of expertise and DoDEA educators to revise the standards in planning to reflect the changes that are recognized while maintaining many of the more traditional spaces. These changes are occurring continually in DoDEA EdSpecs as a result of feedback post-occupancy, collaborative reflection of the design center expertise, and results of planning charrettes.

Design Concepts

The following areas in a school are designed to be adaptive and responsive to emerging technology and research in the educational delivery process:

Classroom Space

Flexibility is desired to provide traditional single-focus, lecture style learning as well as collaborative and group activity style learning within the same day or even the same class period. This is accomplished through classroom geometry and configuration, furniture and furnishing design, as well as technology layout. The use of modular furniture and casework provides the ability for a teacher to divide a classroom space into smaller break-out learning environments as needed. The furniture is to be comfortable and ergonomic to promote greater student involvement. The flexibility to incorporate multiple teaching styles within the class period provides greater achievement by more students with varying learning styles.

Common/Circulation Space

Flexibility to provide creative learning spaces outside the classroom in common areas and corridor space through the use of furniture and technology adaptations. The use of such non-traditional space is responsive to the nature of collaborative learning exhibited by digital native students that have grown up connected through social networking and media.

Physical Education in Design

Flexibility in the layout of corridors for walking paths, multipurpose rooms for organized physical activity and site design that provides for outside student activity when possible. Symbols, color blocks, numbers, and other identifiers on the floor are used to define individual “space” as well as teach color recognition, basic counting skills, and create organized class

groupings for activities at the primary level. While the teachers still require basketball goals and volleyball stanchions, these are used for basic skill teaching and drills and not for actual competitive games in elementary schools. High quality audio systems and acoustical performance is considered in the design in order to make the space more flexible as a learning environment.

Grade/Use Configuration

Flexibility to utilize a learning space for different grade levels and/or subject matter based upon each cohort's unique needs from semester to semester. A classroom is designed to provide an appropriate learning environment for different age levels in order to provide flexibility in scheduling from year to year as grade level population changes.

Future Expansion

Flexibility in the design of facilities to allow for future expansion and repurposing of existing space as educational needs and practices evolve.

The consideration of flexible use space is continually discussed and in place during Planning and Design Charrettes. Implementation of many of the concepts explored and adopted through feedback and focus groups lies in the realm of the Design Center expertise and revision of EdSpecs documents. Industry best practice ideas are continually finding their way into discussions and EdSpecs revisions.

To a large degree, much of the flexibility of use involves stepping away from traditional student chairs with table arms and the use of reconfigurable table and chair pieces during the FF&E procurement process.

10.0 CONCLUDING REMARKS

DoDEA and the Department are committed to providing schools of the highest quality for the children of Service members. The standard design process that begins two to three years prior to construction can provide a vehicle for revision to account for lessons learned and advances in technology or educational methods. The goal of a school that meets both today and tomorrow's needs is a program objective. As previously noted, DoDEA has implemented substantial enhancement within its design program and processes. The Design Center, continually evolving EdSpecs, the use of BIM, and a core of A&E firms familiar with public and private school innovation will allow DoDEA to provide facilities that are flexible and enduring. DoDEA will continue to evaluate internal design processes to ensure that evolving best practices and design innovations in public and private school construction are incorporated into the design of DoDEA schools.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
1322 PATTERSON AVENUE, SE SUITE 1000
WASHINGTON NAVY YARD DC 20374-5065

IN REPLY REFER TO

1 September 2009

MEMORANDUM FOR: DEPARTMENT OF DEFENSE EDUCATION ACTIVITY
(ATTN: Russell W. Roberts)

SUBJECT: MILITARY CONSTRUCTION (MILCON) DESIGN: DODEA DESIGN CENTER CONCEPT PROPOSAL

1. Thank you for your memorandum of 1 July 2009, seeking NAVFAC concurrence with the Department of Defense, Education Activity (DoDEA) Design Center concept, and requesting our participation on the team.

2. We accept your request to have NAVFAC represented on the DoDEA Design Center team. Our team member and technical point of contact for this effort is Mr. Santora McKinney of our NAVFAC Atlantic office, who can be reached at (757) 322-4381, email santora.mckinney@navy.mil.

3. We support the approach of establishing a cadre of Architectural and Engineering (A&E) firms that can produce Building Information Models expected to lead to reduced design costs, improved functionality and better construction quality for DoDEA schools projects.

4. NAVFAC execution of DoDEA MILCON projects is done through our Facilities Engineering Commands (FECs) that align under NAVFAC Atlantic and NAVFAC Pacific. For our FECs to effectively execute the DoDEA projects with the cadre of A&E firms, we will require Procuring Contracting Officer (PCO) ordering authority and Administrative Contracting Officer (ACO) authority to allow full utilization of the United States Army Corps of Engineers (USACE) A&E contracts as needed. We have discussed this with USACE Norfolk District and they have concurred. In addition, to ensure consistency of design products executed by NAVFAC, we will require adherence to the Unified Facility Criteria (UFC) 1-300-09N, "Design Procedures".

5. While we know there are significant details to be ironed out for execution of the Design Center concept, we look forward to working with you and the USACE on these efforts.

JOSEPH. E. GOTT, P.E.
Chief Engineer, and
Director, Capital Improvements

Copy to:
HQ USACE (Attn. Joe Tyler)
USACE Norfolk District (Attn: C Fromme)
NAVFAC Atlantic (OPS, ACQ)
NAVFAC Pacific (OPS, ACQ)
NAVFACENGCOM (OPS, ACQ)

Attachment 1

DoDEA Contracted Architect and Engineer Firm Awards

2010 Excellence in Structural Engineering - Outstanding Project
Delaware Valley Association of Structural Engineers (DVASE)
Monmouth University
Multi-Purpose Activity Center
West Long Branch, NJ

2010 Project of Distinction
College Planning & Management
Education Design Showcase
Monmouth University
Multi-Purpose Activity Center
West Long Branch, NJ

2009 Excellence in Structural Engineering - Outstanding Project
Delaware Valley Association of Structural Engineers (DVASE)
Skidmore College - Arthur Zankel Music Hall
Saratoga Springs, NY

2009 Excellence in Structural Engineering – Award of Merit
Delaware Valley Association of Structural Engineers (DVASE)
Drexel University – Recreation Center
Philadelphia, PA

2009 AIA El Paso
Design Awards
"Merit Award"
El Paso Independent School District
Tom Lea Jr. Elementary School (E-16)
El Paso, TX

2009 TASA / TASB
Exhibit of School Architecture Award Competition "Process of Planning Award"
Borger Independent School District
New Gateway Elementary School
Borger, TX

2009 TASA / TASB
Exhibit of School Architecture Award Competition "Design"
Borger Independent School District
New Gateway Elementary School
Borger, TX

2009 TASA / TASB
Exhibit of School Architecture Award Competition "Sustainability"
Borger Independent School District
New Gateway Elementary School
Borger, TX

2009 Honorable Mention for Middle Schools,
CEFPI South Carolina Awards
Longleaf Middle School,
Columbia, SC

2008 Texas Construction Best of '08
"Best of K-12"
Borger Independent School District
New Elementary School
Borger, TX

2008 TASA / TASB
Exhibit of School Architecture Award Competition "Process of Planning Award"
Snyder Independent School District
New Elementary School
Snyder, TX

2008 Special Recognition for Historically
Referenced Ecclesiatical Design, CEFPI
South Carolina Awards
St. Gregory the Great Catholic School,
Beaufort, SC

2008 Best In Class for Early Childhood Center,
CEFPI South Carolina Awards
Children's Center at Carolina Park,
Columbia, SC

2008 Ranking 57 in the Top 100 Interior
Architecture and Design Firms in America
Top 100 Interior Design Giants

2007 Merit Award – Renovation
American Institute of Architects Cleveland Chapter
Hamilton College, Skenandoa House
Clinton, NY

2007 AIA - Lubbock Chapter
Bi-Annual Design Awards
"Award of Honor"
Snyder Independent School District
New Elementary School
Snyder, TX

2007 AIA - Lubbock Chapter
Bi-Annual Design Awards
"Merit Award"
Lubbock Independent School District
Two New Elementary Schools
Lubbock, TX

2007 Best In Class for Elementary Schools, CEFPI
South Carolina Awards
Mossy Creek Elementary, North Augusta, SC

2007 Best In Class for Middle Schools, CEFPI
South Carolina Awards
Kelly Mill Middle School, Columbia, SC

2007 Ranking 68 in the Top 100 Interior
Architecture and Design Firms in America
Top 100 Interior Design Giants

2006 Citation Award
Educational Design Excellence in American School and University
Lankenau Hospital Walter and Leonore Annenberg Conference Center for Medical Education
Wynnewood, PA

2006 IIDA International Illuminating Design Section Award
Illuminating Engineering Society
Walter and Leonore Annenberg Conference Center
for Medical Education at Lankenau Hospital
Wynnewood, PA

2006 Interior Award, AIA Greater Columbia
Mossy Creek Elementary, Columbia, SC

2006 Ranking 69 in the Top 100 Interior
Architecture and Design Firms in America

2006 Top 100 Interior Design Giants
CEFPI, Best in Class Award
Wando High School, Mt. Pleasant, SC

2005 Small Business Partner for
Education" Award from Wake Education
Partnership

2005 Honor Award – Built Work
American Institute of Architects Cleveland Chapter
Walter and Leonore Annenberg Conference Center
for Medical Education at Lankenau Hospital
Wynnewood, PA

2005 New Jersey Golden Trowel Award for Best of Colleges/Universities
International Masonry Institute
Drew University Seminary Hall
Madison, NJ

2005 Excellence in Structural Engineering Outstanding Project Award
Delaware Valley Association of Structural Engineers
Walter and Leonore Annenberg Center for Medical Education at Lankenau Hospital
Wynnewood, PA

Publications

School Planning and Management, Feb 2009, "Beating The Odds", for the $58M Edwardsville District Capital Improvement Plan American School and University, Nov 2009, Goshen and Cassens Elementary Schools

Conceptual Plan

This Ed Spec covers:

- GENERAL PURPOSE CLASSROOM (GPC)
- GIFTED EDUCATION (GIFTED)
- HOST NATION (SEE HOST NATION – JAPAN FOR SPECIAL REQUIREMENTS)
- LANGUAGE ARTS/ READING/MATH SUPPORT (LARMS)
- LEARNING IMPAIRED – MILD TO MODERATE (LI-MM)

Planning Requirements

NSF:

Full-size Classroom	950 sf	(88 m^2)

Functional Area Descriptions

The primary instructional space in a school is the General Purpose Classroom. This space is considered a full-size classroom. Gifted Education, Host Nation, Language Arts/Reading/Math Support, and Learning Impaired – Mild to Moderate also utilize a full-sized classroom space. The general requirements for all of these full-size classroom spaces are listed in this education specification. Specific requirements for these spaces are listed individually in the Systems Requirements schedules.

An approximately square plan serves full-size classrooms best. Place the room entrance adjacent to the instructional area. The instructional area of the classroom is occupied by the teacher and instructional equipment. Include variable light control and direct access to the intercom.

The student instruction area shall be designed to allow lectures and demonstrations by the teacher in group and individual settings. Furnish with student desks and/or tables.

Storage shall be provided for equipment and instructional materials. Storage space is always a premium. Maximize storage on the interior wall where cabinets can extend all the way to the ceiling if funding permits. On the exterior wall, provide base cabinets, cubbies and shelving below a counter in order to maximize opportunities for windows. The sink must be positioned adjacent to a wall or tall cabinet where the soap and paper towel dispensers can be located within easy reach of the children. Do not place soap and paper towel dispensers on the wall behind the sink.

General Purpose Classroom
As the primary instructional space in a school, the general purpose classroom supports instruction for Math, English, Social Studies, and Language Arts. Generally group the classroom units by subject matter or teams. Cluster classrooms around the central portion of the school, close to the media center.

Gifted Education
The Gifted Program provides supplementary and/or intensified instruction for those students who benefit from challenges. This room functions as a resource room for individual and group instruction, a laboratory for individual and small group research, and as a center for development of student projects. Locate the Gifted Program classroom close to the media center. Coat storage and cubbies are not needed in this room. Provide additional cabinets and counter space for storage and display of projects.

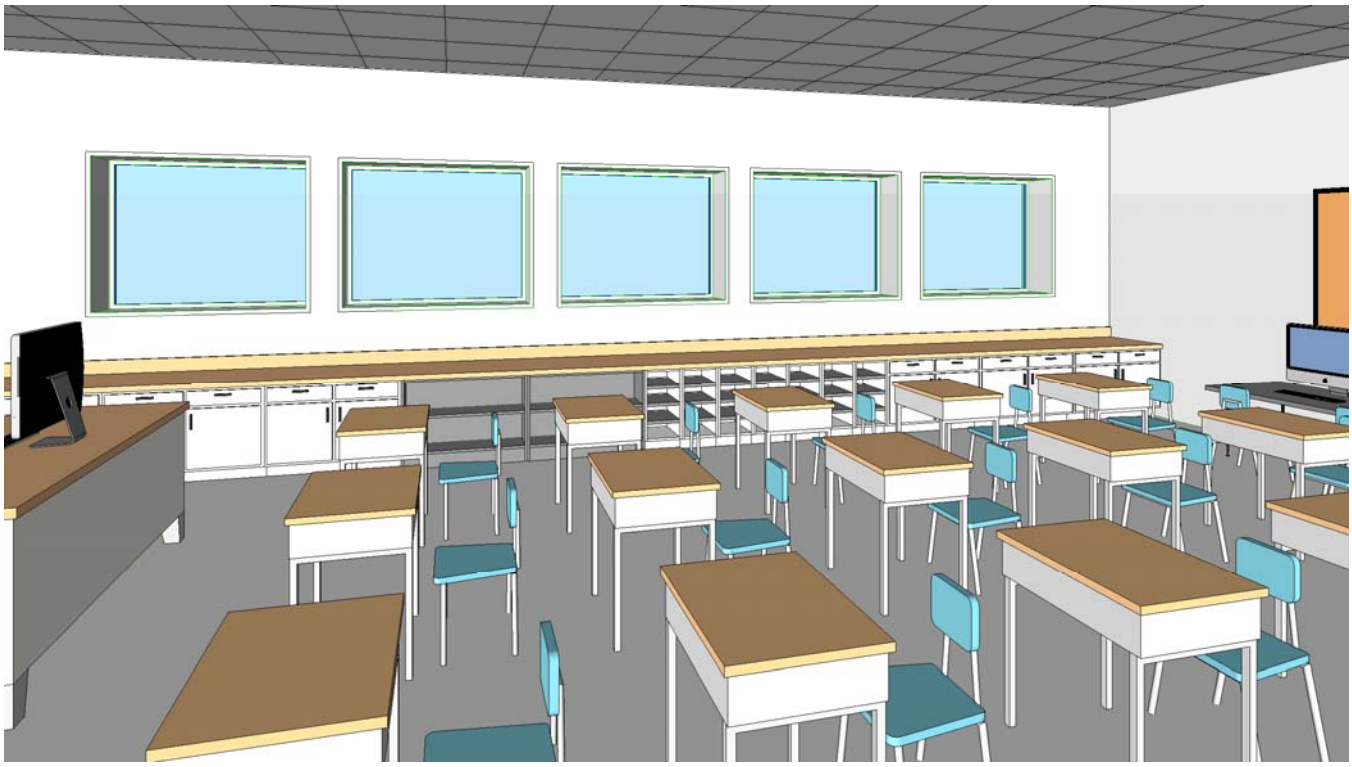
Host Nation – DoDDS Overseas Schools (See Host Nation – Japan for special requirements)
The Host Nation program provides students with an introduction to host nation languages, taught by host nation teachers, as an essential experience of the DoDEA curriculum. With host nation teachers as guides, students also participate in activities that build appreciation and understanding of the culture of the country in which they are located. The Host Nation Classroom shall include amenities for specialized cultural activities and light preparation of host nation foods.

Language Arts/Reading/Math Support (formerly Read 180)
This space serves as a classroom area for students who need extra help in language arts, reading or math. This room should be outfitted the same as the general purpose classroom.

Learning Impaired – Mild to Moderate
The Mild to Moderate Learning Impaired Area serves as the instructional space for up to 15 children per instructional session with mild to moderate learning or emotional difficulties. These students will spend less than 50% of their day in this room. However, classroom space must be available to support students who may require more time in the special education classroom. Coat storage and cubbies are not needed in this room. Learning impaired classrooms should be located to provide convenient access to mainstream education and as close to peers the same age as possible. Where multiple special education spaces are provided, they should be distributed throughout the building, not grouped together in one area. Built in and loose furniture must be ADA compliant.

Concept Views

Teaching Wall



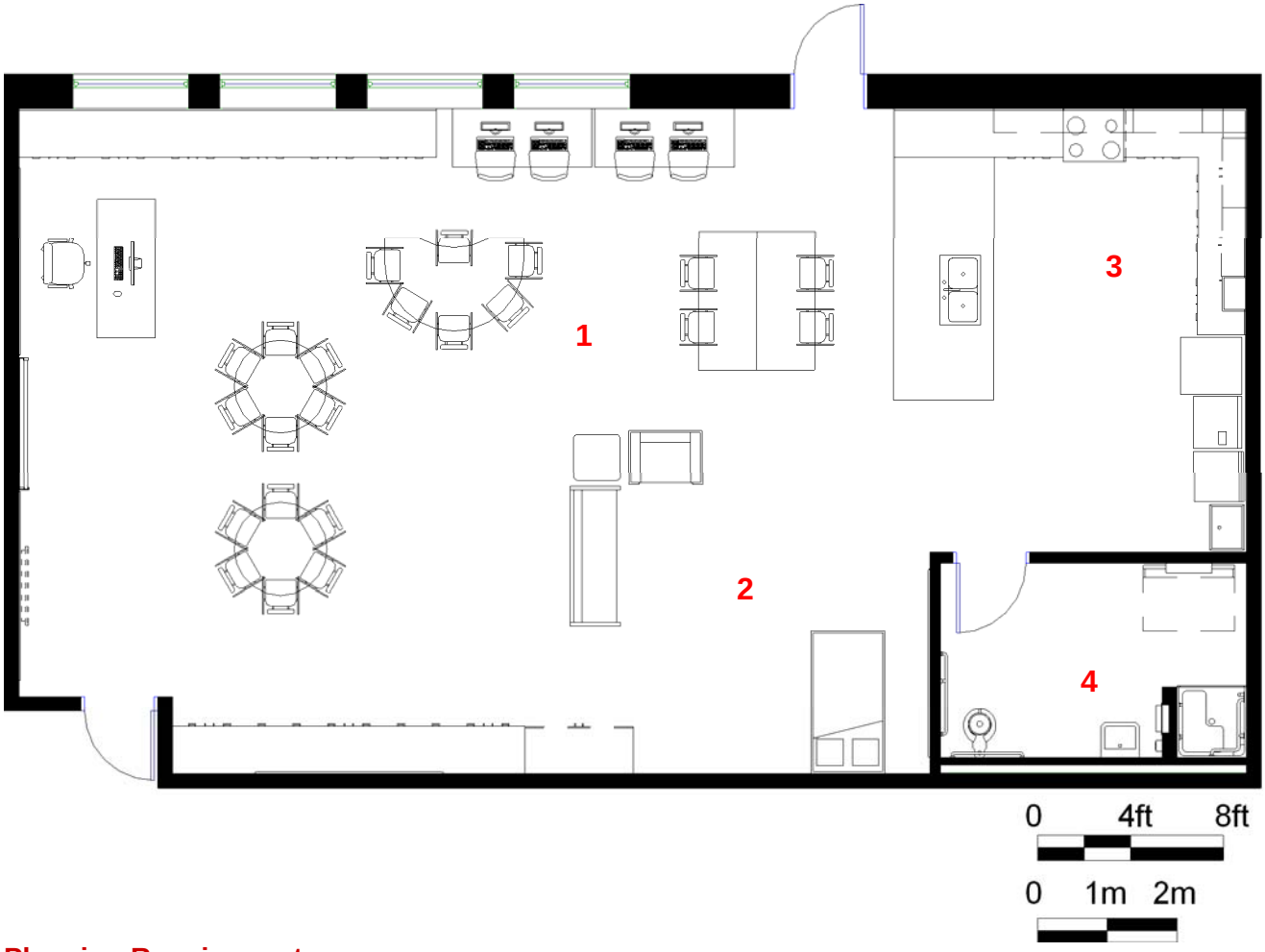
Exterior Wall

Rear Wall

Interior Wall #1

Interior Wall #2 – alternate layout without student coat storage

Conceptual Plan



Planning Requirements

NSF:

1	Student Instruction Area	1100 sf	(102 m^2)
2	Home Living Area	200 sf	(19 m^2)
3-4	Kitchen and Restroom Area	300 sf	(28 m^2)

Functional Area Descriptions

The Learning Impaired – Severe (LIS) area is the instructional space for children with severe learning difficulties. The room should accommodate up to 12 students. These students will spend more than 50% of their day in this room. Learning impaired classrooms should be located to provide convenient access to mainstream education and as close to peers of the same age as possible. The classroom should have variable light control and high quality acoustical controls including ADA compliant, built-in sound field systems to accommodate students with specific learning disabilities, hearing impairments, and/or severe auditory processing deficits. The room should be on the ground floor and have outside access. Built in and loose furniture must be ADA compliant.

1 CLASSROOM

The student instruction area uses desks and/or tables to allow demonstrations by the teacher in group or individual settings. Structure should support two areas for specialized equipment hung from the ceiling to provide flexibility in arranging the space. Locate an instructional area at the front of the classroom with direct access to the intercom, main entrance, and a teacher-controlled master switch for all electrical equipment.

Provide a computer area with accessible stations with ample room for over-the-shoulder tutoring. Provide adequate maneuvering clearances for students to make and retrieve their own printouts. There should be a common printer location.

Provide a storage area with space for equipment and instructional materials. A sink and drinking fountain should be provided. Counter and sink heights should be based on the age of the students using them.

2 HOME LIVING AREA

Dedicate part of the primary classroom area to dining area, living room, and bedroom areas. Locate these areas adjacent to the kitchen and restroom area.

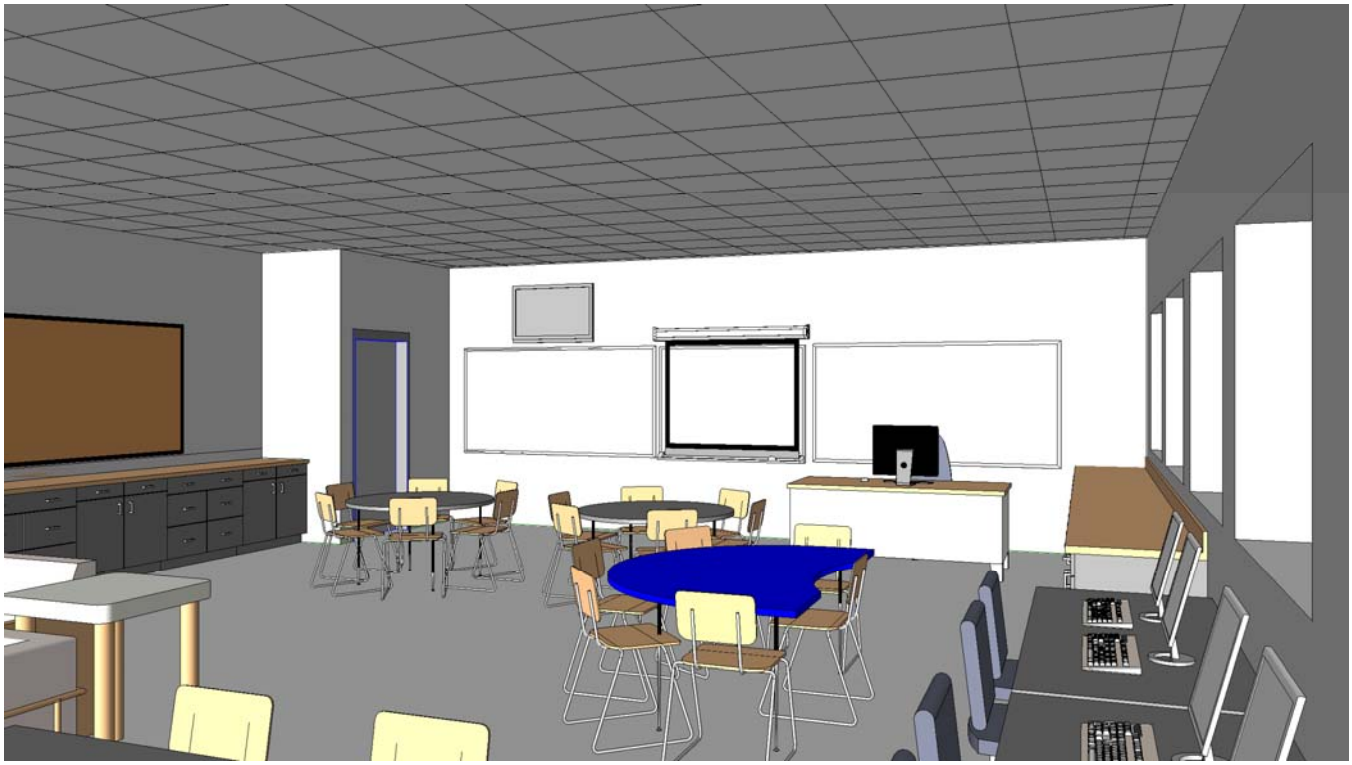
3 KITCHEN

The kitchen shall be provided as a separate room as shown. Include a half wall between the classroom and the kitchen for observation. The kitchen should provide a double sink, refrigerator, cooking range, microwave, dishwasher, and clothes washer and dryer.

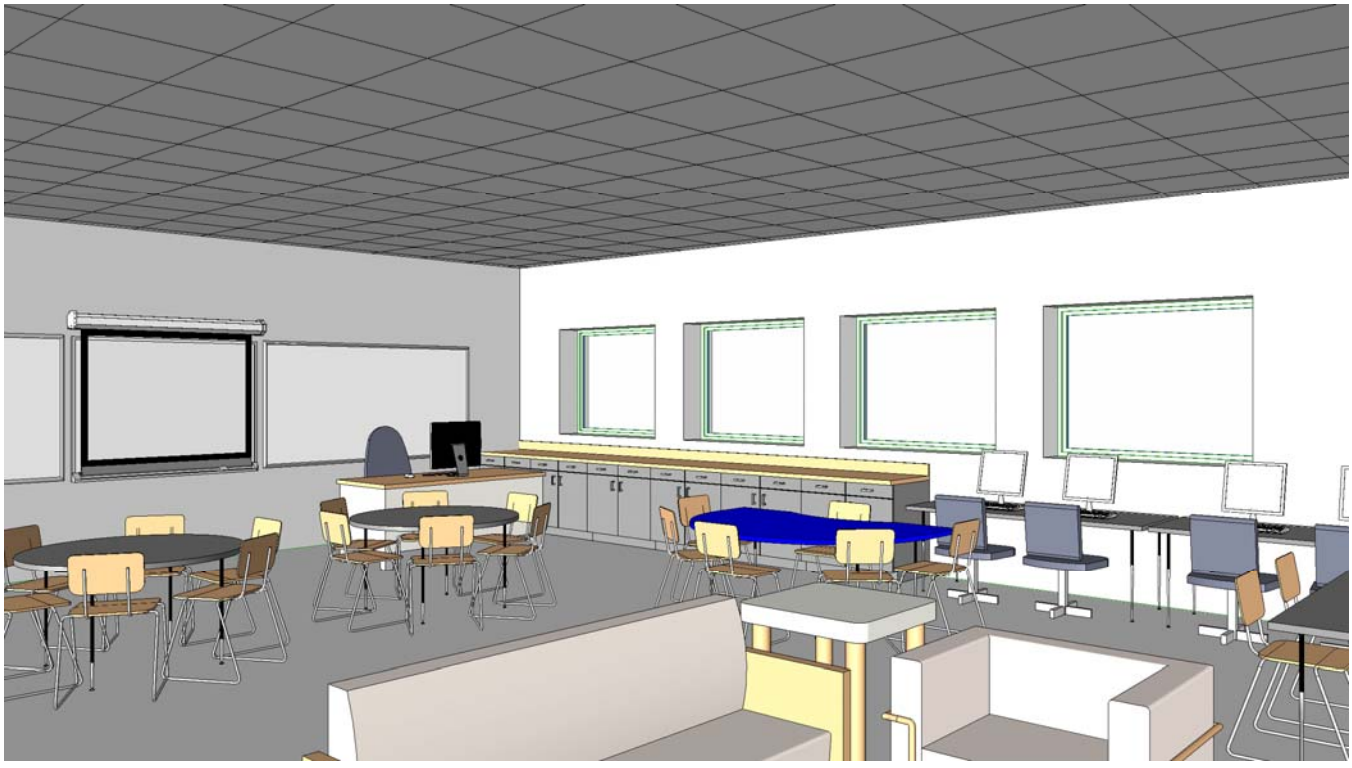
4 RESTROOM AREA

A unisex, ADA compliant restroom should contain sufficient space for diapering/hygiene needs. Include a shower and a changing table space for diapering/hygiene needs. The changing table may require a hydraulic lift with appropriate electrical outlets. Include storage for supplies.

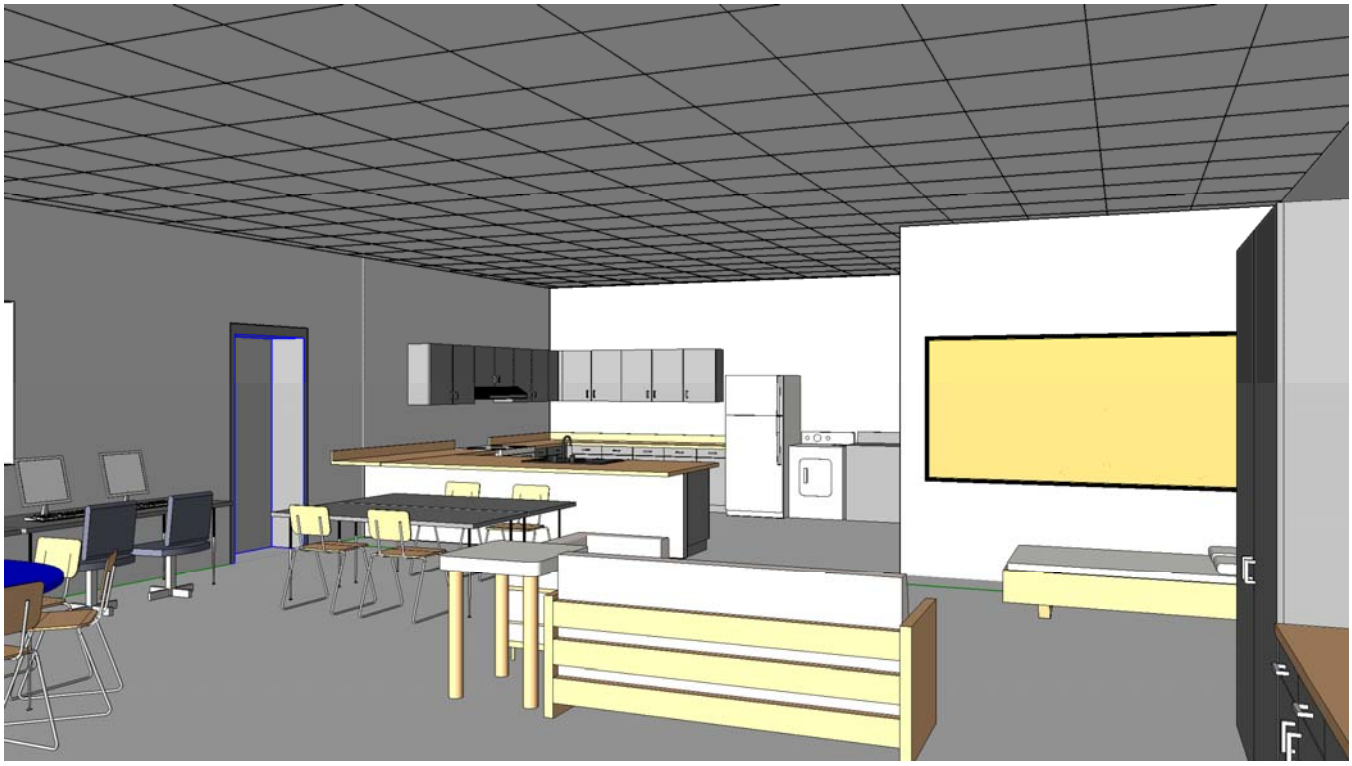
Concept Views



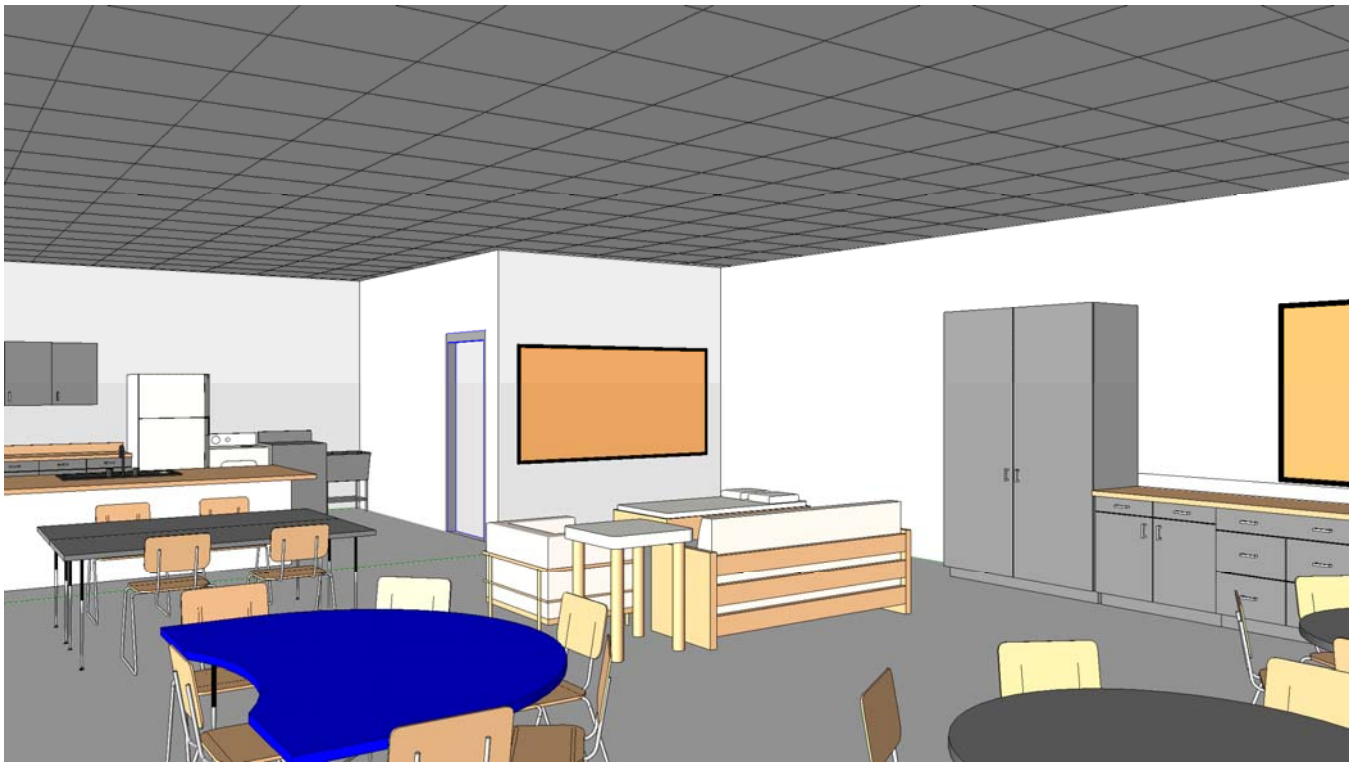
Teaching Wall



Exterior Wall



Kitchen Area



Living Area