Submitted by: Chairman of the Assembly at the request of the School Board
Prepared by: Anchorage School District
For Reading: October 28, 2008

CLERK'S OFFICE
APPROVED
Date: 10-28-08

ANCHORAGE, ALASKA
AR NO. 2008-250

A RESOLUTION OF THE ANCHORAGE MUNICIPAL ASSEMBLY APPROVING THE PRELIMINARY (CONCEPTUAL) DESIGN FOR THE SAND LAKE ELEMENTARY SCHOOL RENEWAL

WHEREAS, Alaska Statute 14.14.060(e) provides that the Assembly approve the preliminary design and subsequent and revised designs approved by the School Board for design of school facilities, and

WHEREAS, the School Board has approved the preliminary design, consisting of a conceptual master plan, for Sand Lake Elementary School Renewal Project.

NOW, THEREFORE, the Anchorage Assembly resolves:

Section 1. The Assembly hereby approves the preliminary design for Sand Lake Elementary School Renewal Project.

Section 2. This resolution shall become effective immediately upon its passage and approval by the Anchorage Assembly.

PASSED AND APPROVED by the Anchorage Assembly this 28th day of October, 2008.

Chair of the Assembly

ATTEST

Municipal Clerk

AM 701-2008

ANCHORAGE SCHOOL DISTRICT
ANCHORAGE, ALASKA

AM 701-2008

MEMORANDUM October 28, 2008

TO: THE HONORABLE MARK BEGICH
ANCHORAGE ASSEMBLY

FROM: OFFICE OF THE SUPERINTENDENT Carol Comeau

SUBJECT: APPROVAL OF THE PRELIMINARY (CONCEPTUAL) DESIGN FOR THE SAND LAKE ELEMENTARY SCHOOL RENEWAL PROJECT

In accordance with AO NO. 2000-106(S), this memorandum provides information required for submission and approval of the preliminary (conceptual) design for Sand Lake Elementary School Renewal Project.

In 2003, the Assembly approved a preliminary design followed by a revised (schematic) design for a 26-classroom Sand Lake Elementary School. Since then, changes in enrollment, educational priorities, and seismic building codes have required significant redesign of the preliminary design. This is a request for approval of the new preliminary design.

On April 1, 2003 voters approved $750,000 to fund design of the Sand Lake Elementary School Renewal project. The School Board approved the selection of Krochina Architects as the Architects of Record on October 14, 2002 (ASD Memorandum #76, 2002-2003) and the municipal assembly approved the selection on October 15, 2002 (AR #2002-308). A previous conceptual (preliminary) design was approved by the school board on May 12, 2003 (ASD Memorandum #263, 2002-2003), and by the assembly on May 20, 2003 (AR #2003-109). The schematic (revised) design and supplemental educational specifications were approved by the school board on November 24, 2003 (ASD Memorandum #124, 2003-2004). The assembly approved the revised (schematic) design on December 16, 2003 (AR #2003-350). Bond issues to fund design completion and construction failed voter approval in 2004 and 2006; as a result, the project was suspended. In April 2008, voters approved bonds for completion of the design and construction of the project. Upon voter approval, project design work was reactivated under Krochina Architects' successor, Nvision Architecture, Inc. The school board approved the conceptual (preliminary) design and increased the construction budget to $16,300,000 on October 13, 2008 (ASD Memorandum #87, 2008-2009).

AO NO. 2000-106(S) requires a description of the proposed school site, school building and building program; the projected student population; the total construction budget and the funding source; the projected project schedule; and any known neighborhood impacts, comments, reactions, which reflect potential impacts of the school building on the neighboring community. The following is in response to these requirements:

Sand Lake Elementary School is located in southwest Anchorage at 7500 Jewel Lake Road. It occupies a 9.23-acre site with residential housing and a church on the north and south sides respectively, municipal park land on the west side, and vehicular access limited to Jewel Lake Road on the east side. Originally built in 1958, the facility has had additions in 1959, 1964 and 1987, bringing it up to its current 24 classrooms. A gymnasium and a music classroom were added in 1987. There are five relocatable classrooms on the site.

Sand Lake Elementary School provides both a regular educational program and a Japanese immersion program for kindergarten through 6th grade. The September 3, 2008 enrollment was 674 students, which is 131% of the facility's program capacity. Although recent influx of students from rural areas has markedly increased enrollment, six-year projections show enrollments will continue to remain relatively the same.

The preliminary design renews Sand Lake Elementary School to meet school board-approved educational specifications. The school currently has 24 regular classrooms. The proposed design reflects the district's standard 26-classroom school and site accommodations for 4 relocatable classrooms with allowance for 2 more should they be needed in the future. The building program's 26 classrooms include two resource rooms, an art classroom, twelve primary classrooms, and twelve intermediate classrooms. Also included are a multi-purpose room, gymnasium, library, counseling, Indian education, English language learners classroom, occupational therapy/physical therapy, and music classroom with storage for the Japanese immersion program's drums. The administrative area reflects an enlarged nurse's suite to meet federal regulations for patient privacy.

The current design differs from that approved by the school board and assembly in 2003. The 2003 design was based on re-use and renewal of most of the existing building. Since then, structural seismic building codes have changed significantly to the extent that most masonry block walls in the school's older areas can not be economically upgraded and need to be replaced. Demolishing the older eastern building portion and the multi-purpose room is the most cost effective solution. A replacement two-story addition will offer opportunities to maximize the use of the site and develop a more efficient floor plan than possible with the existing facility's location and configuration. That portion of the facility remaining will be renewed to provide a quality environment equal to the new portions. Because the site was never intended for the heavy traffic of parents transporting students, this demolition will also allow reconfiguration of pedestrian and vehicular routes to improve safety and on-site queuing. The State Department of Transportation/Public Facilities has installed a traffic signal at the Jewel Lake Road and Strawberry Road intersection at the site's southeast corner which promotes safer pedestrian and efficient vehicular site access.

This preliminary design results from a collaborative process involving an advisory building design committee composed of school participants, parents and Sand Lake community members. The Sand Lake Community Council received the presented design well and expressed interest in following future developments in the design.

During recent building design committee meetings, two community concerns raised in 2003 have continued to be expressed: 1) ongoing automobile traffic due to parent transportation for the Japanese Immersion program and neighborhood students especially during morning drop-off, with traffic backing up in both directions onto Jewel Lake

Road; and 2) retaining the existing hockey rink. This design responds to those concerns by increasing on-site queuing space and maintaining the hockey rink at its present location.

The preliminary design estimate is within the construction budget. The method of project delivery used is general contractor/construction management (GC/CM). The GC/CM contract partner, Davis Constructors and Engineers, Inc., assists in controlling costs while maintaining a design that meets the district's educational, functional and maintenance needs. Project construction is anticipated to begin in 2009 and completed by the end of 2010.

Attached is a set of preliminary design drawings.

AR-2008-250

Municipality of Anchorage
MUNICIPAL CLERK'S OFFICE

Agenda Document Control Sheet

AR 2008-250

(SEE REVERSE SIDE FOR FURTHER INFORMATION)

1	SUBJECT OF AGENDA DOCUMENT ANCHORAGE SCHOOL DISTRICT APPROVAL OF PRELIMINARY (CONCEPTUAL) DESIGN FOR THE SAND LAKE ELEMENTARY SCHOOL RENEWAL PROJECT AM 701-2008	DATE PREPARED 10/28/2008 Indicate Documents Attached AO ☐ AR ☒ AM ☒ AIM ☐
2	DEPARTMENT NAME ASD FACILITIES DEPARTMENT	DIRECTOR'S NAME RAY AMSDEN
3	THE PERSON THE DOCUMENT WAS ACTUALLY PREPARED BY RAY AMSDEN	HIS/HER PHONE NUMBER 348-5156

4	COORDINATED WITH AND REVIEWED BY	INITIALS	DATE
	Mayor		
	Municipal Clerk		
	Municipal Attorney		
	Employee Relations		
	Municipal Manager		
	Cultural & Recreational Services		
	Fire		
	Health & Human Services		
	Merrill Field Airport		
	Municipal Light & Power		
	Office of Management and Budget		
	Police		
	Port of Anchorage		
	Public Works		
	Solid Waste Services		
	Transit		
	Water & Wastewater Utility		
	Executive Manager		
	Community Planning & Development		
	Finance, Chief Fiscal Officer		
	Heritage Land Bank		
	Management Information Services		
	Property & Facility Management		
	Purchasing		
	Other		
	Carol Comeau, Superintendent, ASD	Carol Comeau	10/20/08
	George Vakalis, Asst. Superintendent, Support Services		10/20/08

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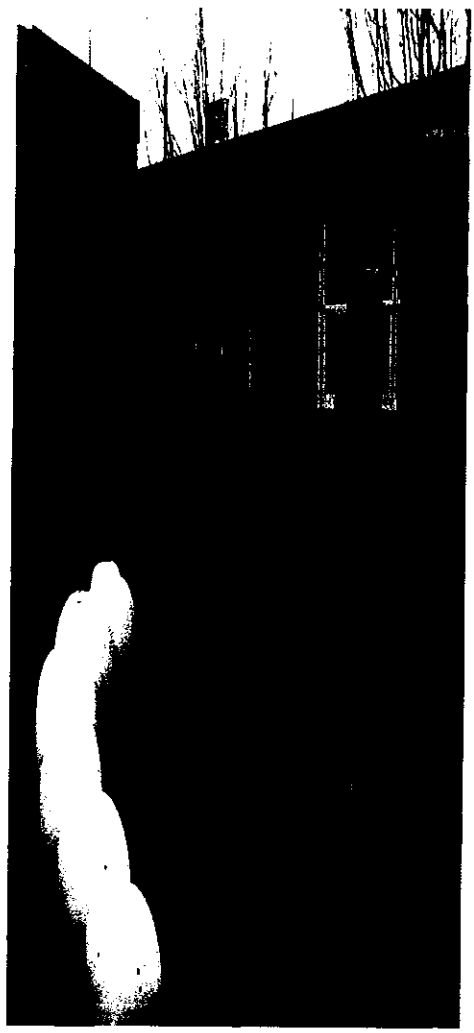
CLERK'S OFFICE
M.O.A.

5	**Special Instructions/Comments**

6	ASSEMBLY HEARING DATE REQUESTED 10/28/2008	7	PUBLIC HEARING DATE REQUESTED

Ref. AR 2008-250

Sand Lake Elementary School Renewal Concept Design and Supplementary Educational Specifications



Sand Lake Elementary
Anchorage School District

September 25, 2008

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ARCHITECTURE

1231 Gambell Street, Suite 400
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HISTORY

A. Project History

Sand Lake Elementary School is an existing school facility which was constructed at its current location in five phases over a period of nearly thirty years; the first being 1959. In 1989 Sand Lake School became the Japanese Immersion Program School in addition to its role as a neighborhood school. The existing school does not adequately serve the Immersion School Program and is suffering from increased student population. In addition to program and physical facility deficiencies, the majority of the Immersion Program students are dropped off and picked up by their parents which creates significant vehicle congestion on the site and along Jewel Lake Road.

The 9.24 acre site is contiguous with the Municipality's Sand Lake Park. The site drainage is failing and needs a complete redesign. In addition, the building is in need of extensive structural, mechanical and cosmetic upgrades. The roof over the older portion of the school is beyond its serviceable life. It is anticipated original windows will need to be replaced as well.

The school has gone through multiple generations of thinking with respect to the best and most cost effective design solution to bring forward after the bond approval in the spring of 2008. Original design concepts were developed in 2002 to upgrade the site, increase the school capacity to meet a 26 classroom school education specification program and to resolve roof repair issues. Through the latest concept phase everything from major renovation and additions, to complete demolition and school replacement, were explored in an effort to bring a sensible and effective solution forward for public approval. The proposed solution provides for the demolition of the oldest construction, renovation of a portion of classrooms and gymnasium and the addition of classrooms, multi-purpose room and kitchen and new administrative offices. Four relocatable classrooms will accommodate students for the near future with the understanding that 6th graders will eventually enroll at a middle school, similar to other district schools. The site shall be redesigned to incorporate program required parking, extend drop-off/pick-up queuing and a new bus loop.

Original Concept Design was priced by HMS and Davis Constructors. Both cost estimates were above a budget allocated to the project. As a result, the original scope of work, site layout and 32 classroom school plan were all reevaluated. The revised proposed Concept Design provides for a 26 classroom school constructed to current education specifications and modest improvements to the site.

B. Sand Lake Construction History & Gross Square Footages (GSF)

Original Construction:	12,910 GSF	1959 YR
Classroom Addition:	10,050 GSF	1960 YR
Multipurpose/Classroom Addition:	9,300 GSF	1965 YR
Library Addition:	1,465 GSF	1972 YR
Classroom/Gymnasium Addition:	22,595 GSF	1986 YR
Existing Building Area (gross SF):	56,320 GSF	

ARCHITECTURAL NARRATIVE

A. Site Design Concept

The revised Concept Design requires only modest changes to the existing site plan. Existing parking is reorganized and a drop-off lane is extended to simplify vehicle circulation and improve pedestrian safety. One way traffic through the site is established with an entrance on the north side and an exit on the south side of the site. An existing driveway, closer to the Strawberry Road intersection, will be eliminated. A new bus loop is planned in front of the school and a designated "bus only" driveway out will allow for quick bus exit. The revised concept design will be coordinated with a traffic light at the intersection of Jewel Lake and Strawberry Road. Exit from the site will be controlled by the light to alleviate congestion issues during peak hours.

Receiving, trash and recycling pick up have been located at the far north of the school adjacent the bus loop. Currently there are only four buses bringing students to the school at the beginning and end of the school day. Using the bus loop for service truck access will be an efficient use of the loop and presents no conflict with student pedestrian traffic due to differing hours of operation. Design will include sufficient landscaping and decorative screening to present the receiving area as an integral and well planned design component.

The revised Concept Site Plan shows parking for 89 cars. The design exceeds Title 21 minimum requirements of 85 spaces because Sand Lake is a commuter school with additional staff and increased parent involvement. To prevent an overwhelming sea of asphalt, the parking area will be provided with enhanced landscape islands and peripheral landscape.

Site Design Objectives:

1. Reduce vehicle congestion and improve safety on Jewel Lake Road. and at school driveways
2. Straight forward vehicular circulation
3. Maximize drop off/pick-up lane
4. Separating bus and car traffic
5. Reduce building footprint to allow maximum site amenities (i.e. playfields, hockey rink, playgrounds, vehicle drop-off, landscaping)
6. Separating play areas from service area

B. Building Design Concept

The proposed design is a culmination of multiple concepts, cost evaluations and exercises that considered everything from complete demolition and replacement to various combinations of design components considered for demolition, renovation and/or replacement. The current design is a 26-classroom school that meets current education specification functional and programmatic requirements. The plan has been articulated to carefully integrate existing remaining functions like gymnasium, classrooms, toilet areas and circulation systems with newly proposed functions. There has been some customization with this school in response to unique needs of the Sand Lake curriculum and community.

1. Core Functions

A main entrance Vestibule opens into a Commons area where the school's two corridors intersect. The Commons allows for school display, 1% for art presentation and enables visitors to visually orient within the school. It also alleviates the potential

congestion of a main intersection and can serve as an overflow lobby for school events at the Gym and Multi-Purpose Room. The Commons will be flanked by the main stair. The main Secretarial and Reception spaces are located directly off the Commons, main stair and main entry. Office staff will be able to view and monitor the halls and people entering the school.

Core areas of the building: Administration, IMC, Music Room, Art Room, Multi-Purpose Room and Gym are located in close proximity to the Commons area off the main entry and the primary circulation system. These areas will be accessible after hours without a need to open the rest of the school. The Japanese Immersion Program at Sand Lake has many active after school programs that put a demand on the facility to be open before and after normal school hours.

2. Classrooms

The proposed building design organizes the school into six pods of four classrooms each. Kindergarten and first grade are located together along the south wing of the school close to the playground. Kindergarten and first grade classrooms will have in-class toilet rooms allowing teachers to easily monitor and care for these activities.

The Sand Lake Elementary Japanese Program requires its students to switch between Japanese and English classrooms during the course of the day. This presents logistical problems as coats and books end up in different rooms at the end of the day. The proposed design places lockers in the hallway of the second floor to eliminate that issue. Without cubbies, the classrooms are more space efficient allowing a slight reduction below Ed Spec. standards. Extra square footage has been added to the hallways to accommodate the lockers. The classroom wet areas will be reduced in size since they normally serve the area around the coat hooks and boot racks. Hallway lockers will serve as coat and boot storage for intermediate classrooms on the second floor. Primary grade classrooms will have traditional cubby storage on the first floor.

All new classrooms may be well served by having portable book bag storage cubbies to minimize the retrieval of forgotten items in the hallway. All new classrooms will have at least four built-in computer stations and a built-in reading bench at the window wall.

3. Exterior Design

From Jewel Lake Road, the proposed design will appear to be an all new school. With the primary addition being planned to the east of the existing school, the school's remaining structure will be completely hidden from view. The design will be a wonderfully balanced combination of two-story, single story and one and one half story volumes that respond not only to functionality but human scale. A blend of materials such as exterior metal, concrete block and heavy timber accents are being planned to create variety in tactile texture and color to create a visually stimulating and inviting first impression. Around main entry points covered canopies will enable students and others to gather out of the weather before and after school. Providing lower level canopies at these points also creates an atmosphere of intimacy and helps younger students not be overwhelmed by the larger classroom wings. These entry points will also be well lit which adds an element of security in the dark winter months.

Exterior windows are being strategically placed to capture not only natural light but provide excellent viewpoints from the interior. Additionally, window size, placement and shape are being purposefully varied to create a playful exterior façade. In a gesture toward traditional Japanese architecture, we expect to introduce translucent

light panels reminiscent of the Shoji Screen that are often used within the Japanese culture to provide a source of light as well as privacy .

All exterior wall materials will be low cost, low maintenance materials that have proven track records for endurance and extended life. To enhance and visually soften these materials landscape elements will be utilized. Carefully chosen and placed trees will also help reduce large scale components such as the two-story classroom wings.

C. Supplemental Educational Specifications

During the concept design phase, Nvision was asked to use the ASD 26 Classroom standard Education Specification as a guideline but also respond to the specific needs of Sand Lake Elementary. Below are listed descriptions of the changes and deviations from the adopted standard Elementary Ed. Spec.

- ***Music***: Sand Lake has an extensive music program that includes Band, Orchestra, Xylophone, Chorus and Japanese Taiko drums. The program is supported by (1) full time and (4) part time teachers. The Multi-purpose Room Stage was designated to be a Band and Orchestra space. Music was placed in a separate classroom with a storage room. Additionally, some of the central storage was designated as a drum and equipment storage room.
- ***Campfire Storage and Kitchenette:*** The program requires storage space for equipment and a Kitchenette off the Multi-purpose Room.
- ***Lockers:*** Coat hooks, boot racks and hat and glove cubbies were eliminated from the intermediate classrooms and lockers placed in the hallway. This approach minimizes the classroom wet area and makes the classroom floor space more useable. Lockers also eliminate logistical immersion program problems where kids do not remain in one classroom through a day.
- ***Speech:*** A larger space is needed because the program serves the community's pre-school children with special needs. An additional area is also needed for parents to wait for or accompany a smaller child in the room.
- ***Time Out Room:*** Two rooms are needed due to the size of the program.
- ***English Language Learners:*** A larger space was requested by ASD due to a changing demographic.
- ***Kitchen:*** Additional storage needs were included in the new area requirement.
- ***Nurse's Room:*** Proposed to be larger due to a change in a district program.
- ***Toilets in First Grade Classroom***: Single toilets were placed in First Grade classrooms to reduce accidents and in response to the draft of the new Ed Specs.
- ***Additional Staff Toilets***: Additional two staff toilets were placed through out the building due to multiple building levels.

D. Project Objectives

School that Fits: Develop a design that will respond to the needs of the Immersion Program and the Neighborhood school and support the values of the community. Evaluate options, look at cost/benefit issues, coordinate with user, and provide a design that is the best long-term solution for the school.

Meet Budget: Design an efficient school meeting the demands of expanded program requirements.

Sustainable Construction: Make design choices that will balance a short-term economic impact with the long-term life cycle cost and the impact on the environment. Seek to design a building based on LEED "Silver" criteria and create a healthy environment that promotes excellence in learning.

Flexible Environment: Commit to creating an adaptable and flexible school that can evolve as the technology advances and needs of the ASD and students change.

Teamwork: The success of any project depends on a team effort, facilitate discussion, work closely with the client to incorporate their goals, interface with students, parents, district staff, and the teachers, to develop creative design solutions that best suit their needs.

E. Public Involvement

Building Design Committee Meetings: Teachers, administrators and school neighbors participated in regularly scheduled design meetings and offered their input at every stage.

Urban Design Commission: The project has been before the UDC for preliminary approval and will continue to work with the Commission and planning staff to ensure the facility meets or exceeds all public related concerns and issues. The design will integrate public ideas and concepts to extent practical.

Planning and Zoning Commission: Similar in nature and process to the UDC. Proposed design has received their approval.

Public Awareness: Met with various community councils throughout the District to explain the Sand Lake special needs requirements during the 'School Bonds YES' campaign.

Website: ASD placed copies of the presentations given to the Building Design Committee on the District maintained website.

Critique Workshops: Nvision and ASD representatives met with individual teachers to gather input on classroom layouts and design concepts in a more intimate one-on-one setting. There have been many great ideas and expressions of interest by the faculty who have been actively engaged in the process of generating the proposed design concept.

LANDSCAPE NARRATIVE

A. Existing Conditions

1. Sand Lake Elementary School is located on a 9.23 acre parcel in south Anchorage in a residential neighborhood. The site is 90% developed with buildings, parking and recreation facilities. An almost one acre area of native forest is located on the north portion of the site. The native forest vegetation, a spruce and birch forest, is typical of the area. The west edge of the school is bounded by native forest as well, most of which is off of the school grounds. The west forest area provides a buffer to Sand Lake which lies just over 300 feet from the school property.

2. Landscaping at the elementary school has occurred as a result of several school improvement projects including original construction. Landscaping includes foundation plantings and roadway landscaping. Landscaping along Jewel Lake Road was inventoried in 2002. A mix of deciduous trees include fairly mature mountain ash and mayday trees that range in size from three to over ten caliper inches. Spruce trees are interspersed in the planting bed and are from 10 to 25-feet tall. As design progresses the inventory will be updated.

3. Landscape beds in front of the building include perennials, mountain ash, mayday, crabapple and spruce trees. Shrubs include honeysuckle, mugo pine, spirea, and lilac. Plants are in generally good condition given their proximity to the building and the limited space for growth. Foundation plantings typically only occur on the east side, the front of the building. All other natural landscape areas are lawn.

4. Other significant landscape features include play fields, hockey rink and the playground.

B. Landscape Needs

1. The site is zoned Public Lands and Institutions (PLI) and is surrounded by residentially zoned land. Densities to the north, west and south are R-1, while across Jewel Lake Road density increases to R2-M. Sand Lake Park, a 5-acre neighborhood park, along the schools west boundary provides a buffer between the school and Sand Lake. An existing paved trail provides access to the park on the north side of the school property, through the native forest.

2. Land is 100% developed within vicinity of the school. Most uses include single family residential, however two churches border the school, one immediately to the north and one east of the school across Jewell Lake Road. Residents to the north are buffered from the school with the broad stand of native forest. Residents to the south, whose backyards abut the school property, depend on fences and their own landscaping to provide some separation. As design progresses, landscape elements will include meeting Title 21 requirements in addition to providing landscape elements that enhance and reflect the character of the school and neighborhood. The school fits nicely into the neighborhood due to its low profile and the mature landscaping that surrounds most sides of the school. Title 21 of the Anchorage Municipal Code requires "visual enhancement" landscaping on areas of the site not being used for building, parking, circulation, and related uses. The existing landscaping generally meets the minimum requirements of Title 21. Jewel Lake Road is classified as a Major Arterial according to the Official Streets and Highways Plan (MOA, 1996). As such Arterial landscaping is required. Infill

landscaping will be added along Jewell Lake Road to improve the appearance of the landscape beds and to meet Arterial standards.

4. For significant plants, protection will occur during the development of the site. Demolition needs often require plant removal as a result of root damage or unknown elements affecting plant growth including utilities. Because foundation plantings are so close to the proposed demolition effort, it may not be reasonable to save vegetation close to the building. Temporary protective fencing needs will be reviewed. Temporary protective fencing is not likely needed along Jewel Lake Road landscape beds, where construction should be able to occur on existing hard paved surfaces. Plans will note that trees are not to be disturbed and penalties for disruption (tree replacement). Oftentimes it is not the new construction, but the staging area that conflicts with existing vegetation. Language in specification and on plans, early site coordination meetings with the contractor and where needed, fencing will assure the forested areas to the west and north are protected. Temporary fencing that is effective includes 6-foot-tall chain link fence mounted on concrete blocks.

B. Proposed Landscape

1. The existing bike path, native forest on the north and west side of the site will remain. The playgrounds will be reconfigured depending on grading necessary for site improvement and new construction. The hockey rink and football/softball fields are to remain. Additional landscaping or landscape elements will be explored along the south property line to improve the relationship between the school and adjacent residences. New foundation plantings will be provided to enhance the front of the building.
   Proposed landscape elements include replacement of trees and shrubs that will be lost due to site improvements and additional landscaping to make the site better for users and the adjacent neighborhood.

2. The overall theme for the landscaping that is being explored reflects the school's use as a Japanese Immersion Program. The design will progress to include Eastern influences, elements that are more subtle in nature so they do not become outdated as school uses change. Design elements may include boulders set in pea gravel and among plantings, gateways, special paving, plant materials that have interest in form and growth habit, and site furnishings that are reminiscent of Japanese style garden elements.

3. A new building entry and plaza are fairly far from the drop-off area. Landscaping will be placed in the open area to bring scale to the space. Views from the building to the drop-off will be kept open. If shrubs are used in this area they will be low to allow open views. It may be possible to utilize the space as open park or play space. As design progress, ideas will be developed. In consideration will be future expansion and use of the area. Foundation plantings increase in depth and breadth from the current situation and will include a variety of trees, shrubs and perennials that will enhance the building's architecture and reflect the nature of the building as a learning institute. Sidewalks are broad and accommodating to children as they wait for a ride. Pick-up stations will allow children to collect in specific places.

Design will further refine these spaces to be low maintenance, easy to use and friendly.

4. Parking lot landscaping will include landscape beds at the end of parking isles and in the center of the bus loop. Islands will help to meet Title 21 requirements for 5% interior landscaping. Snow will need to be hauled from parking areas.

5. The playgrounds and recreation facilities will be inventoried to determine if they meet ASD requirements for safety, accessibility and play element events and quantities. As required play equipment will be updated to meet local and national standards and guidelines. Budgetary constraints may limit upgrades to playfields and the hockey rink, however all disturbed areas will be repaired and brought to existing or better condition.

6. The climatic zone of the school is Zone 3, as determined by the United States Department of Agriculture (USDA) Plant Hardiness Classification System. Temperature maps for Anchorage show the area to be moderate relative to Anchorage city-wide temperatures with measurements typically 1.5 degrees warmer than the official measuring site at the airport. At the coldest extreme, Zone 3 temperature ranges are from –30 degrees to –40 degrees Fahrenheit, with a typical growing season from mid-May to the end of September (120 to 140 days).

7. Plant material selections will include only plants known hardy to Zone 3. The plant palette will expand from the more traditional selection of plants to include a mix of deciduous and evergreen trees that such as weeping larch or specialty spruce, fir and pine whose character is unusual or unique, again reflecting the Japanese Garden style where plant materials are used to resemble landforms.

8. All plants will be planted in planting beds comprised of topsoil (typical depth 18-inches for trees) amended to meet plant needs; shredded/chipped wood and rock mulch; and edging to separate plants from lawn areas. These and other strategies to reduce maintenance will be explored as design progresses.

CIVIL NARRATIVE

A. Civil Design Criteria:

- Location – Anchorage, AK
- Water System – AWWU Standards
- Sewer System – AWWU Standards
- Site Design and Storm Drainage – 1994 Municipality of Anchorage Standard Specifications (MASS); 2007 MOA Design Criteria Manual (DCM); 2007 MOA Title 21; Americans with Disabilities Act (ADA) design standards
- Fire requirements – Determined by MOA Fire Marshall.
- Green school standards – Leadership in Energy and Environmental Design (LEED) "Silver Standard"

B. Owner-Furnished Data:

1. Owner provided as-built drawings seem to be complete. Additional information regarding the soil properties has been collected in July & August 2008.

C. Existing Shallow Utilities:

1. Known existing utilities that serve the school are domestic and sprinkler water, sanitary sewage collection, storm drainage collection and disposal via dry wells, natural gas, telephone and underground power.
2. Cable TV is probably installed but no surface indication was observed to verify underground cable locations. It is anticipated that the cable TV service lines will need to be extended.
3. The existing gas and telephone lines will need to be extended or rerouted for the proposed option.
4. The existing electrical line that currently supplies power to the west wing of the school will be rerouted to accommodate the proposed wing.
5. There are three utility poles and 2 light poles in the southwest parking area which will be removed and the utility lines will need to be rerouted to accommodate the proposed addition, as well as continue to supply the east wing with power while the addition is being constructed. This will need to be done early in the demolition process as these poles and utilities are located within the footprint of the proposed addition. This must be coordinated with the electrical engineer
6. All of the below ground utilities may be affected by the installation of the new drywells and re-grading of the parking lot and bus turn around areas at he the northeast corner of the site.

D. Fire Protection Plan:

1. The fire protection plan will include installing a building sprinkler system and exterior fire hydrants (two existing and two new).

2. The fire lane providing fire truck access around the entire school will be upgraded to meet the required weight limits and turn radius of the Anchorage Fire Departments response vehicles.

E. Water Upgrades:

1. Upgrading the school's water service will include the construction of approximately 480' of 8" water service line. This line will be constructed from the water main in Jewel Lake Road to the mechanical room in the proposed addition add will provide adequate water supply to the school, the sprinkler system and a new fire hydrant. This new line will require AWWU to perform a live tap on the 12" water mainline located within the Jewel Lake Road right of way
2. A new single pumper fire hydrant will be constructed along this line somewhere near the NW corner of the proposed addition. This hydrant will provide effective hydrant coverage for the north and west sides of the school.
3. The existing 4" water service line will remain during construction of the new addition to continue providing the existing school with water. Once the addition has been completed and the existing west wing has been demolished the 4" line will be removed and replaced with a 6" line that will be extended to the somewhere near the southeast corner of the new addition where a second single pumper fire hydrant will be added. This will require approximately 190' of 6" water line and the hydrant will provide effect hydrant coverage for the south and east sides of the school.

F. Sewer Upgrades:

1. Approximately 108 feet of existing 6" sewer line will be replaced from the building footprint to the existing angle point near the southwest corner of the lot.
2. A control manhole will be constructed within 5 feet of the foundation wall and an additional manhole will be constructed at the angle point.
3. It appears as though the location of the existing line will accommodate the new addition just fine, but there will need to be significant coordination with the contractor to keep the line operational for the east wing while construction of the new addition takes place.

G. Site Drainage:

1. A major issue concerning the site drainage is the 2007 revisions of the MOA Title 21 and the Design Criteria Manual (DCM). These revisions have not been adopted yet, but it is anticipated that they will be by the time plans are submitted for review. The proposed changes are much more constrictive about how on-site storm water must be addressed, particularly in regards to on-site retention of storm water. Designing to the new standards will require the drywells to be slightly larger than previously anticipated.

2. The existing drainage system is composed of drywells in the front and rear of the building. Limited exploration of the systems has shown that the existing conditions of the drywells are failing or are in danger of failing.
3. There are 5 existing drywells along the east wall of the school. All of these will be removed as part of the demolition process. There are 3 existing drywells that are used for roof drains at the north end of the east wing which will also be removed during demolition. The 3 existing drywells in the rear (west side) of the school will be removed and replaced with new drywells.
4. The main parking area is currently served with 2 drywells. These drywells are failing and will need to be removed and replaced. An additional drywell and catch basin will be constructed at the south end of the parking lot to insure proper drainage of the parking lot. The storm drain lines connecting the existing catch basins with the drywells may need to be replaced as well depending on the final design depth of the new drywells.
5. The drywells will be constructed of perforated manhole sections. The design depths of the new drywells will range from 7' to 9' deep.
6. The drywells will have a minimum 8' diameter at the base (including the manhole section diameter), and 2:1 side slopes filled with washed rock extending to 4' below finished grade. By extending the washed rock to the side slopes the design depths will be greatly reduced. New design regulations will require that these drywells also be interconnected.
7. Roof drains from the proposed addition will be tied into new drywells installed to the north and east of the addition.
8. The storm water runoff in the main parking lot will be collected in 4 existing catch basins and one new catch basin.
9. Drainage for the existing paved area near the southwest corner of the school will continue to follow the existing drainage pattern. This runoff will be transported by sheet flow to the vegetated area located in southwest corner of the property.
10. Surface runoff from the north side of the school will be designed to sheet flow onto the vegetated areas and playfields in northwest corner of the lot.
11. If required by the MOA we may have to carry the site runoff into the storm sewer system located approximately 75' west of the northwest corner of the property. To do this storm drain piping would be required from the drywells to the drainage easement located across the northern portion of Tract B3, of Burston Subdivision which is located directly to the east of the school. This property is owned by the Municipality of Anchorage.
12. According to the current MOA requirements this project will need a complete Storm Water Pollution Prevention Plan (SWPPP) to be prepared, certified, and implemented. Because the construction site will be greater than 1 acre, the SWPPP will have to be filed with the Environmental Protection Agency (EPA), and will require filing a Notice of Intent (NOI).
13. There are also many drainage issues to address during the demolition and construction phases of this project. The contractor's final determination of the equipment and building materials storage areas, as well as the location of the

temporary modular buildings may require construction of additional temporary drainage swales and/or detention ponds to achieve adequate site drainage.

H. Temporary Relocatable Classrooms:

1. The site currently includes five temporary relocatable classrooms located in the south parking lot. There will be additional temporary relocatable classrooms temporarily placed on the site to accommodate the staff and student body during demolition of portions of the west wing and construction of the new addition. The final layout and design criteria for these temporary structures cannot be determined until their size and usage requirements have been provided.
2. Once the location and layout of the temporary relocatable classrooms has been determined there will need to be include re-grading and compaction of the area, installation of the temporary shallow utilities to support the buildings, and additional lighting for safety purposes.
3. In order to accommodate the construction of the new addition the playground equipment at the southwest corner of the school will likely need to be either be relocated for use in other areas of the school, or removed from the site entirely. This will be determined by ASD at a later time.
4. Once the addition is constructed and operational all temporary relocatable classrooms, except for these to house program needs (4 min.), and associated utilities will be removed from the site.

I. Site Upgrades:

1. A design survey was completed in 2003 which focused on the area immediately surrounding the existing school and the area between the school and Jewel Lake Road. An additional survey has been performed in September 2008 which extended the limits of the previous survey to the property boundaries. Additional data was gathered beyond the north and west property boundaries to determine site drainage patterns and surface water run-off routes.
2. The existing parking lot located in the front (east) of the school will retain its current footprint but will be need to be reconfigured to accommodate the bus turnaround/exit lane.
3. A portion of the parking lot will be expanded once the existing wing has been demolished to accommodate the expansion of the drop of lanes.
4. Approximately 70-80% of the pavement in the existing parking lot will need to be removed and replaced, during construction of the drywells, waterlines, catch basin piping, shifting of the middle exit to the north, and removal of existing underground piping that will be abandoned per this project.
5. The area vacated by the old building wing will be backfilled and landscaped. Sidewalks will also be constructed to connect the parking lot to the entrance to the new wing, which is approximately 90ft west of the parking lot.
6. The design of the south exit of the parking lot will make use of the expanded width that has been provided by the Strawberry and Jewel Lake Road intersection upgrade complete summer 2008. This will be a three lane exit-only configuration which will be slightly skewed to allow a lane of traffic to cross the intersection and travel east on

Strawberry Road. This exit will need to be reconfigured upon constructing the new bus turn around and the current "bus only" entrance at this location will need to be removed in order to get the MOA traffic departments approval for this project.

7. The playground areas along the northwest and southwest side of the school will most likely be removed or relocated during construction to accommodate the equipment and building materials storage areas.
8. The existing hockey rink will remain in place, but it may be required to use it as a staging area for equipment or materials, or for placement of the temporary modular buildings during construction.
9. It is anticipated that the existing football/baseball fields will be also be used as a staging area for the construction. If this is the case, then it may be required to upgrade the surface of the fields and provide additional drainage for this area.

J. Off Site Improvements:

1. There will be a turning lane added on the southbound side of Jewel Lake Road. This lane will accommodate a smoother vehicular traffic flow into the school at peak times. As part of this work the existing People Mover Bus stop will be moved to the south side of the north entrance to the school. This will require the existing bike trail to be modified in various places. The two existing driveways for the church are to remain at their current grades and locations.

STRUCTURAL NARRATIVE

Snow	=	Pg = 50 psf, Pf = 40 psf
	=	Ce = 1.0, Ct = 1.0, I = 1.1
Snow Drift	=	Per ASCE 7-05
Floors, Office, Classroom	=	50 PSF, Reducible
Partition	=	20 PSF, Not Reducible
Corridors, Stairs	=	100 PSF, Not Reducible
Storage	=	125 PSF, Not Reducible
Mechanical	=	125 PSF, Not Reducible
Concentrated	=	1000 LB, Not Reducible
Wind	=	Building Occupancy Category III
		100 mph 3-Second Gust
		I = 1.15 Exposure B
		(GCpi) = 0.18, qh = 19 PSF

Components and Cladding		
Wall, within 5 ft of outside corners	=	29 psf
Remainder of wall	=	24 psf
Roof, within 5 ft of roof corners	=	55 psf
Within 5 ft of roof edges	=	37 psf
Remainder of roof	=	22 psf

Seismic

Building Occupancy Category III
Seismic Design Category D
Soil Site Class D, I = 1.25
Ss = 1.5, S1 = 0.55, Sds = 1.0, Sd1 = 0.55
Basic Seismic Force Resisting System:
Concentrically Braced Frame, Special Steel
R = 6, OMEGA = 2.0, Cs = 0.208
Equivalent Lateral Force Analysis

APPLICABLE CODES

International Building Code, 2006
Minimum Design Loads for Buildings and Other Structures, SEI/ASCE 7-05
Building Code Requirements for Structural Concrete, ACI 318-05
Specifications for Structural Steel Buildings, ANSI/AISC 360-05
Seismic Provisions for Structural Steel Buildings, ANSI/AISC 341-05
Steel Joist Institute
Steel Deck Institute

FRAMING SYSTEM

The proposed framing system is a special concentric braced structural steel system. A full vertical load carrying frame is proposed to support gravity loads. The new structure is proposed to be seismically independent of the existing structural system that is to remain. Roof levels for the new construction will be kept low enough so that snow drift potential will not impact the existing structural framing.

Roof Framing

The roof framing is proposed to be 1 ½" deep galvanized steel decking supported on wide flange steel beams and girders. Open web steel joists are proposed for the new multipurpose room. Beams and girders will be supports on tube steel or wide flange columns. The use of wide flange columns will generally be limited to the multipurpose walls where girts may be needed to span horizontally between the column to support exterior walls.

Floor Framing

The floor framing is proposed to be 2 ½" concrete over 1 ½" deep galvanized composite steel decking which is supported on wide flange steel beams and girders. The concrete and metal deck floor will be composite with the wide flange beams to both minimize the depth of the framing and to control deflections of the framing system. The beams and girders will be supported on the steel columns. Column spacing will be coordinated with the architectural layout to minimize impacts to the functions of the building.

Foundation System

The foundations are anticipated to be conventional concrete spread footings similar to the existing school foundations. The exterior perimeter foundations will be approximately 4'-0" below grade with 8" concrete stem walls and 16" wide by 10" deep strip footings and concrete pads and piers at the columns. The interior column footings are anticipated to be approximately 8" below the finish slab. Deeper footings with concrete piers will be required at braced bay locations.

Lateral Load Resisting System

The lateral load resisting system will be comprised of the steel roof deck and the floor concrete fill over steel deck which span horizontally between vertical steel bracing. Bracing locations will be coordinated with architectural layouts to minimize layout impacts and mechanical layouts to ensure adequate space for routing duct work. The bracing will be special concentric bracing which generally entail large gusset plates. These large gusset plates at the ends of the brace members are usually the major points of conflict requiring close coordination.

Existing Construction

The addition will be independent from the part of the building that will be remaining following completion of this project. The intent is to have as little impact on the remaining structure. Therefore, roof elevations will be closely reviewed to limit potential snow drift onto existing roofs. However there will be some minor modifications to the existing walls where parts of the existing building are to be removed. These modifications include ensuring the existing lateral load resisting system is maintained and is complete and existing walls are adequately braced in the final configuration.

MECHANICAL NARRATIVE

A. Design Conditions:

Location (Anchorage, Alaska):	61.10°N Latitude and 150.01°W Longitude
Altitude:	114'
99% Winter Design Temperature:	-23°F
Summer Design Temperature:	68°F Dry Bulb and 58°F Wet Bulb
Daily Temperature Range:	15°F
Heating Degree Days:	10,470 (Base 65)

B. Building Codes:

2006 International Mechanical Code
2006 Uniform Plumbing Code
2006 International Building Code
2006 International Energy Code
2006 International Fire Code
All relevant NFPA Codes

C. Design Standard:

ASD Mechanical Design Standard, October 2007

The following information is preliminary in nature and is only an engineering estimate. All information provided is based on floor plans provided to CMH Consultants. Preliminary sizing is only for "order of magnitude" information and not intended to be definitive.

Mechanical systems described are an initial concept and may change depending on final design layout and input from the facility owners, the Architect, and other design professionals involved in the design of this facility.

Equipment and systems incorporated into our design will be straightforward, reliable, easily maintainable and cost effective. All specified equipment will be items that are used throughout Alaska with maintenance, parts, and service available.

D. Design Proposals:

The existing Sand Lake Elementary School was constructed in phases from 1956 through 1985. The wing of the school that runs north-south, the older portion of the building, is generally referred to as the East Wing.

The West Wing consists of the Multipurpose Room, added in 1964, and the 1985 addition that runs east-west. This is the newest portion of the school.

The current design proposal will permit the existing East Wing to remain operational while the addition is constructed directly behind it. This will require the demolition of the current Multi Purpose Room and surrounding structure, while the 1985 addition will remain and

will be connected to the new addition. This will require the existing boiler room and fan room to remain operational during the construction of the addition.

The East Wing will remain operational during the construction of the addition, and the 1985 addition will remain but will not be occupied by students during construction.

Upon completion of the addition and with the new boiler room providing heat, the existing boiler room will be isolated and removed from the buildings hydronic system.

E. Mechanical Heating:

The new facility after the completion of the demolition and the addition will be approximately 62,500 square feet. 46,304 of this will be new construction and 16,196 will be existing.

The primary heat generation will be provided by natural gas fired boilers. The estimate heat load for this facility, including the ventilation load, is approximately 2,200 MBH. We anticipate using 2 high efficiency boilers (Thermal Solutions boilers like those used at Whaley), each at approximately 2/3 the total design load. This will permit the facility to maintain heat and be in operation even if one boiler should be off line and out of service. Therefore each boiler would have an approximate heating output of 1,500 MBH.

For optimum operation, it is best to have individual combustion exhaust stacks from each boiler. These boilers will be direct vent, so they will each also have individual outside air intake stacks.

The heating fluid will be water, with glycol only used at points where freezing might occur, such as air handling unit heating coils. This will be accomplished by having brazed plate and frame heat exchangers at the air handling units, with the boiler heating water on the hot side, and the glycol water mixture on the cold side. Each brazed plate and frame heat exchanger will has an associated pair of hydronic circulation pumps serving the air handling unit(s) heating coil(s).

A central glycol fill station will be located near the loading dock to fill the remote glycol tanks in the fan rooms.

All hydronic pumps will be in duplex pairs. This will permit the systems to remain operational should a single pump be out of service. We anticipate using self regulating, variable speed pumps. These pumps will greatly reduce electrical energy consumption, as they can be up to 85% efficient and will eliminate the need for more expensive three-way hydronic control valves, as well as the associated piping and valving.

The heating fluid for the air handling unit coils and other piping subject to freezing will be a mixture of 50% propylene glycol and 50% water in order to provide freeze protection at temperatures likely to be encountered in Anchorage, AK. In order to maintain the glycol level in the hydronic fluid, a glycol make up tank will be provided. This tank will be fully automated and totally self-contained. Although the user will need to keep the glycol tank filled with the appropriate glycol/water solution.

The hydronic heating fluid will be distributed throughout the facility using copper pipe, for pipes 4 inches and smaller. Larger pipes will be flanged iron pipe. No grooved end pipe

will be used. If in floor heat is used, PEX piping will be used in all under floor applications.

Each room will be independently thermostatically controlled, the terminal heating will be accomplished by fin tube, and the ventilation will be VAV box

A gas fired unit heater in the boiler room will provide heat in the boiler room should there be a system failure that causes both boilers to be out of service. This will permit maintenance and repair personnel a warm work environment in order to perform repairs. This will also prevent the mechanical equipment from freezing and causing more damage to the boilers.

F. Mechanical Ventilation:

With an outside air design temperature of -23°F, the ventilation units will require 75% of their air flow to be return air from the building and 25% outside air. This will provide a mixed air temperature of approximately 45°F. This temperature will provide a margin of safety to ensure that the hydronic coils used in the air handlers are not subject to freezing.

Per ASD standards, we anticipate using variable air volume air handling units with hydronic heating coils. The heating coils will be able to modulate the discharge air temperature to maintain a comfortable interior space temperature. At this time, no mechanical cooling is anticipated, as general space cooling can be provided using outside air.

It is estimated the total ventilation for this facility will be approximately 46,800 Cubic Feet per Minute (CFM) with 25 percent of that total, or 11,700 CFM, to be outside air. This will be accomplished through the use of new air handling units as well as existing air handling units in the 1985 addition. The existing air handling units will be refurbished, and brought up to current ASD standards. It is estimated that four new air handling units will be installed in this project.

The new ventilation system will be a variable air volume system with supply air ducted throughout the new addition. Return air will only be ducted where required, as plenum space will be used for the majority of the return air.

Exhaust fans will be provided for general area exhaust, and restroom exhaust. Restroom exhaust fans are sized to remove 75 CFM per each urinal and for each toilet. Therefore, each of the main restrooms will have a 600 CFM fan. Each kindergarten restroom will have a 75 CFM fan.

Ventilation will be provided for the Electrical and Tele/Com rooms as required.

The boiler room is proposed to be on the first level of the facility. In order to keep this boiler room cool, a combination cooling fan and combustion air fan will be installed in the boiler room. This fan will use boiler room air mixed with outside air in order to have a discharge air temperature of 45°F and maintain the boiler room below 80°F. The heat gain to the boiler room from the boilers is approximately 4% of the heat output of the boilers. With a maximum expected heat output of 2,200 MBH, this cooling fan will be

approximately 2,400 CFM. In addition to the cooling fan, there will be a need for a relief air/combustion air louver in the boiler room wall.

All ductwork will be designed and installed per SMACNA standards. SMACNA is the industry standard for all ductwork installations. In the non-public areas and in areas where the ductwork is hidden, standard rectangular ductwork will be used. In the public areas where the ductwork is visible, spiral round ductwork will be used.

G. Plumbing Systems:

The domestic water piping will be a combination of copper and pex piping. Copper will be used for main runs. The piping to the terminal plumbing fixtures will be either copper or pex piping.

Waste piping below grade will be cast iron soil pipe. Piping above grade will have the option to be any Uniform Plumbing Code approved material and fittings.

Rain leader piping below grade will be cast iron soil pipe. Piping above grade will have the option to be any Uniform Plumbing Code approved material and fittings.

Plumbing fixtures will be vitreous china and suitable for commercial use. Toilets and urinals in the restrooms will be wall hung which permits easy cleaning of the floors. The toilets and urinals will operate with flush valves. Lavatories will be counter-mounted or wall hung where applicable with single lever control handles. The appropriate fixtures will be mounted for ADA compliance. The main restrooms will use a lavatory system (hand wash station) with infra-red controls.

Domestic hot water will be produced using an indirect fired water heater. The water heater will be set at 140°F to prevent bacteria growth. The domestic hot water will be distributed at 105°F, and the temperature will be reduced through the use of a thermostatic control valve. This lower temperature is used to prevent scalding.

The domestic hot water system will also incorporate a hot water circulation pump and piping. This will ensure a very short wait time for hot water at the plumbing fixtures.

H. Mechanical Insulation:

All outside air ductwork will have 2 inches of rigid fiberglass thermal insulation in order to prevent condensation from forming on the ductwork.

All ductwork in sound critical areas, and all duct work within 20 feet of the connection to the air handling unit will have 2 inches of interior duct acoustical lining.

All hydronic piping, domestic cold water piping, and domestic hot water piping will be provided with fiberglass insulation to limit unwanted heat loss from the hot pipes and to prevent condensation on the cold pipes.

Cold water pipe insulation will be specified with a complete vapor barrier.

All exposed piping within 10 feet of the floor, will have a PVC protective jacketing system covering all pipes and elbows. All other pipe will utilize all-purpose facing.

All plumbing vents will be insulated three feet down from the roof termination point with fiberglass insulation and all-purpose facing.

I. Mechanical Controls:

The controls for this facility will be direct digital controls in order to optimize energy usage, and allow shut down of systems that are not needed. VAV box coils will use simple modulating control valves to maintain discharge air temperature. Duct coils and terminal heating equipment serving individual rooms will be operated by a room thermostat.

Control dampers will be used at all outside air intakes and exhausts. This will help maintain the thermal envelop when the systems are shut down, or if a system should be in an unoccupied mode.

During the unoccupied mode, the outside air damper will be closed to outside air and 100% of the return air will be re-circulated in order to maintain building temperature. This will greatly reduce the amount of heat that needs to be added to the supply air. The interior facility temperature will be 60°F during the unoccupied mode which will also reduce energy consumption.

During the occupied mode, air handling units will need to provide the minimum outside air requirement, which is approximately 25% of the total air volume. The heating coil will not have hydronic heating fluid flow through it until the outside air damper modulates to the minimum position. This is accomplished to reduce the heat load by limiting the amount of outside air that needs to be heated to supply air distribution temperature.

Boiler controls will be provided by the boiler manufacturer and will maintain the heating boiler fluid temperature at 180°F. The boilers will not be controlled by the building DDC system. However, the DDC system will be able to "communicate" with the boilers as needed for proper system operation. This is usually accomplished through a 4-20 mA signal, depending on the DDC system installed. Control of boilers is recommended in this fashion to ensure proper boiler operation and to maintain the manufacturer's warrantee.

The hydronic duplex pump controls will be standard lead/lag controls. When the lead pump is in operation, the lag pump will be off. Should the lead pump fail, the lag pump will automatically start. The DDC system will alternate which pump is lead and which pump is lag in order to even out run time on each pump.

The domestic hot water circulation pump will be on a timer, and shall only operate when the facility is occupied.

J. Fire Protection

The entire facility will have an NFPA 13 fire protection and suppression system upon completion. This will require updates to the existing 1985 addition.

K. Testing and Balancing

After substantial completion, a contractor specializing in the balancing and testing of mechanical systems will test and balance the various mechanical systems. The contractor will verify system and control operation and adjust the systems to the design flow rates as specified on the design drawings.

The system balance points will be marked in the field on the balancing valves and dampers, as well as included in the balancing report that shall become part of the operation and maintenance manuals.

ELECTRICAL NARRATIVE

I. ELECTRICAL CRITERIA

A. Electrical Service

1. The existing electrical service is 1000 amps, 208/120V three phase, 4 wire. The peak demand of 380 amps for the school occurred in December of 1999.
2. The existing electrical service will be inadequate to supply the power for the remodeled school, addition, and temporary classrooms. We anticipate a 1200 amp, 208/120V, three phase 4 wire service being required. The upgrade to 1200A from 1000 amp will involve pulling new 600Kcmil feeders in place of the existing 500Kcmil feeders and replacing the main breaker on the MDP from 1000amp to 1200amp. The new main breaker will be outfitted with "shunt-trip" capability so that the disconnect can be operated from a pushbutton to be installed in a lockable enclosure outside the building adjacent to the utility transformer. This will satisfy the local code requirement for a disconnect on the outside of the building.

B. Emergency Power / Standby Power

1. The school has an existing 15kw generator that is configured to provide emergency power to egress lighting. Some battery backed up fixtures are also used for egress lighting. The generator does not serve the building heating equipment, and is inadequately sized and configured to do so.
2. New lighting will be provided with battery backed up ballasts, and therefore will not be required to be connected to the generator.
3. The generator will be replaced with a larger 35kw unit and 150amp transfer switch. This will allow the generator to supply the building heating equipment.

C. Main Distribution Panel (MDP)

The existing MDP installed in 1995 is rated for 1200amps and is in good condition. As described in the electrical service section, the main breaker will need to be equipped with a Shunt-trip device to comply with local amendments to the National Electric Code.

D. Sub Panels

1. The panels located in the 1995 addition are in good condition and will remain in place. It is anticipated that many of the loads on these panels will be removed or reconfigured.
2. The panels in the original school, gym, and multi-purpose room are older and will be demolished as part of the school renovation. They are adequate to supply temporary power during the construction effort.
3. New panels will be provided in the new/renovated areas to supply electrical loads.

E. Emergency Systems

1. Emergency Signage:

   Exit signs are generally provided where required. The scope of the renovation work will require replacement of most if not all existing exit signs.

2. Emergency Lights:

   The design will include replacement of all generator supplied emergency lights with battery-backed up emergency lights throughout the building.

3. Fire Alarms Systems:

   The existing fire alarm system was upgraded in 1995. The system does not meet current requirements for quantity and location of visual devices. The proposed corridor modifications will significantly impact the wiring for the fire alarm system. The design will include replacement of the existing fire alarm system, wiring and field devices.

F. Standard Electrical Equipment

1. Interior Lighting:

   a) Original Classrooms, office, corridors, Multi-Purpose Room and library: This area will be demolished and lighting removed.

   b) 1995 Addition; The fixtures used in these areas are 13 years old. Classrooms are deep cell parabolic fluorescent fixtures with T12 lamps and energy saver magnetic ballasts. Deep cell fixtures are not typically used anymore because they provide a very "dark" ceiling effect. The lighting in this area will be replaced with new fixtures matching the new classrooms.

   c) Gymnasium: The gymnasium lighting is equipped with metal halide lighting, which is consistent with current ASD designs, however the lighting level is 35 foot-candles or less. Consistent with IESNA and allowing adequate lighting for sports events, the lighting will be replaced with new T5HO fluorescent fixtures to obtain 70 foot-candles. This lighting system will allow multiple lighting levels, instant on, energy savings and lighting control via occupancy sensors.

   d) Classrooms: The new classroom lighting design will include energy efficient fluorescent fixtures using T8 or T5 lamps and electronic ballasts. The design lighting levels for these areas will be 70 foot-candles as required by the ASD design guide. Lighting control will include occupancy sensors, and bi-level lighting.

   e) Office and Corridors: The new Office and Corridor lighting design will include energy efficient fluorescent fixtures using T8 or T5 lamps and electronic ballasts. The design lighting levels for these areas will be 50 foot-candles as required by the ASD design guide. Lighting control will include occupancy sensors in the office areas, and time clock control for the corridors.

   f) Multi-Purpose Room: The lighting in the new Multi-Purpose Room will be T5HO fluorescent fixtures with electronic ballasts. The fixtures will be multi-level switched to allow flexibility in the use of the space.

2. Exterior Lighting:

   a) Parking lot: The parking lot lighting consists of five pole mounted lights along Jewel Lake Boulevard and building mounted lights. The building mounted lights will be removed as part of the renovation, and six pole mounted lights will be provided to provide adequate parking lot and bus loop illumination. The new lighting will be designed to meet the recommendations of the IESNA of 0.2 foot-

candles minimum and 20:1 uniformity ratio. Control will include photo cell and time clock. The lighting will be configured to turn on at dusk, turn off at 11PM, turn on a 5am (when dark) and turn off at dawn.

b) Playground: Existing playground light fixtures are mounted on the roof parapet of the original school and will be removed as part of the demolition. An existing pole mounted fixture located in the center of the playground will be replaced with four similar fixtures to provide a more uniform illumination of the area. Three new pole mounted lights will be provided on the south edge of the school property to illuminate the playground. Design lighting levels will be 0.1 foot-candles minimum throughout the playground area. Control will include photo cell and time clock. The lighting will be configured to turn on at dusk, turn off at 11PM, turn on a 5am (when dark) and turn off at dawn.

c) Hockey Rink: Hockey Rink lighting is generally adequate and should not require modifications. Lighting control will be manual with lockable switch.

3. Electrical Devices:

Most of the power and data devices, conduit and wiring in the school will be impacted by renovation work, and will be replaced as part of these upgrades.

G. Communications Systems

1. Security System:

All of the existing system, conduit and wiring will be impacted by the renovation, and will be replaced. The new system will be the GE Interlogix "Infographics" Security system that has been adopted as a standard by the ASD. The new system will include: exterior door switches, break glass sensors in each first floor room with exterior window, motion sensors in the hallways, gymnasium, library and multipurpose room, and CCTV cameras monitoring playground, and entrances.

2. Intercommunication, Clock and Programming System:

All of the existing system, conduit and wiring will be impacted by the renovation, and will be replaced.

3. Telephone System:

All of the existing system, conduit and wiring will be impacted by the renovation, and will be replaced. Consistent with current ASD designs, the wiring for the telephone equipment will be integrated with the Data horizontal cabling. A 25 pair inter-tie cable from the telephone company's termination point to the telephone switch location, and a 100 pair cable from the telephone switch location to patch panels located in the data system rack will be provided. The ASD will provide the telephone switch separately.

4. Data System:

All of the existing system, conduit and wiring will be impacted by the renovation, and will be replaced. Consistent with current ASD designs, the data system will include data ports as indicated in the current Ed Spec in each classroom, office and other spaces. Horizontal Category 6 cable will be provided to the data room, and terminated at rack mounted patch panels. Active network components (switches, servers, and etc.) will be provided by the ASD separately.

H. Temporary Services

1. Power:

   The upgraded electrical service may be adequate to supply the temporary classrooms (relocatables) required by this project, but it would be more efficient to supply a free-standing temporary service to supply the relocatables, located adjacent to them. This would allow some service disruptions during renovation from affecting the classrooms, and significantly reduce the cost of extending feeders from the school to the multiple relocatables.

2. Intercom and data systems:

   Temporary wiring between the school and relocatables would provide basic service, it should be anticipated that the temporary wiring may not meet Category 6 data specifications.

26 CLASSROOMS | **Anchorage School District**
SAND LAKE ELEMENTARY SCHOOL | **Sand Lake Elementary School**
Supplemental Ed Spec - Program Area Calculation | **Nvision Architecture - September 22, 2008**

PROGRAM SPACES	Exist. Sand Lake SQ FT	Ed Spec - 26 CR SQ FT	Proposed Suppl. Ed. Spec - 26 CR SQ FT	Remarks
Administrative Support				
Reception	84	150	150	
Secretarial (Includes Secure Closet)	417	420	420	
Student Timeout		40	40	
Student Timeout			40	Extra Students
Conference	176	225	225	
Principal's Office	147	250	250	
PTA/Community Schools	163	250	250	
Nurse Room (including restroom)	487	335	550	Program delivery increase
Principal Intern		90	150	Full time Asst. Principal
Subtotal Administration	**1,474**	**1,760**	**2,075**	
Staff Support Services				
Staff Lounge includes a staff restroom	762	725	725	
Staff Rest Room			50	2 story building need extra restroom
Staff Rest Room			50	2 story building need extra restroom
Staff Rest Room			50	Renewal inefficiency
Production and Storage (Workroom)	214	365	365	
Subtotal Staff Support	**976**	**1,090**	**1,240**	
Student Support Services				
Counseling Office		250	150	Program change
Indian Education	100	300	150	Program change
Psychology Office		100	120	Program need
Itinerant Office		100	120	Program need
Itinerant Office (Speech)		100	120	Program need
English Language Learners (Bilingual Ed)	432	150	400	Program change
Subtotal Student Support	**532**	**1,000**	**1,060**	
*Classroom Instruction **				
Kindergarten w/ toilet	4,291	1,250	1,200	Hallway breakout area
Kindergarten w/ toilet		1,250	1,200	Hallway breakout area
Kindergarten w/ toilet		1,250	1,200	Hallway breakout area
Kindergarten w/ toilet		1,250	1,200	Hallway breakout area
Primary Classroom - 1st Gr. - w/ toilet	9,093	1,000	975	Hallway breakout area
Primary Classroom - 1st Gr. - w/ toilet		1,000	975	Hallway breakout area
Primary Classroom - 1st Gr. - w/ toilet		1,000	975	Hallway breakout area
Primary Classroom - 1st Gr. - w/ toilet		1,000	975	Hallway breakout area
Primary Classroom - 2nd Gr.		1,000	975	Hallway breakout area
Primary Classroom - 2nd Gr.		1,000	975	Hallway breakout area
Primary Classroom - 2nd Gr.		1,000	975	Hallway breakout area
Primary Classroom - 2nd Gr.		1,000	975	Hallway breakout area
Primary Classroom - 3rd Gr.		1,000	950	Lockers & hallway breakout area
Primary Classroom - 3rd Gr.		1,000	950	Lockers & hallway breakout area
Primary Classroom - 3rd Gr.	9,425	1,000	950	Intermediate to Primary-Lockers & hallway breakout area
Primary Classroom - 3rd Gr.		1,000	950	Intermediate to Primary-Lockers & hallway breakout area
Intermediate Classroom - 4th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 4th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 4th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 4th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 5th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 5th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 5th Gr.		1,000	950	Lockers & hallway breakout area
Intermediate Classroom - 5th Gr.		1,000	950	Lockers & hallway breakout area
Lockers & Hallway Breakout Areas			1,000	Flexibility in classroom & Program
Instructional Support Conference		165	165	
Art Activity Lab (includes lab & storage)	973	1,500	1,500	
Subtotal Classroom Instruction	**23,782**	**26,665**	**26,665**	

26 CLASSROOMS | **Anchorage School District**
SAND LAKE ELEMENTARY SCHOOL | **Sand Lake Elementary School**
Supplemental Ed Spec - Program Area Calculation | **Nvision Architecture - September 22, 2008**

PROGRAM SPACES	Exist. Sand Lake SQ FT	Ed Spec - 26 CR SQ FT	Proposed Suppl. Ed. Spec - 26 CR SQ FT	Remarks
IMC				
Teaching Stations (2) and Stacks	2,520	2,465	2,465	
Technology Lab	364	750	750	
Library Office/Workroom	366	150	150	
AV & Periodical Storage		225	225	
Computer Equipment Room		150	150	
Subtotal IMC	**3,250**	**3,740**	**3,740**	
Special Education				
Resource Classroom	736	1,000	1,000	
Resource Classroom		1,000	1,000	
Occupational/Physical Therapy (OT/PT)		370	0	Program uses platform/stage
OT/PT Storage			50	Area to store equipment
Speech Therapy		150	300	Program delivery change
Subtotal Special Education	**736**	**2,520**	**2,350**	
Food Service				
Food Service	338	550	600	Additional storage needs
Subtotal Food Service	**338**	**550**	**600**	
Music				
Music Performing Classroom		950	950	
Music Office	98	175	0	Office in classroom
Music Storage	54	100	200	Increase to house drums
Subtotal Music	**152**	**1,225**	**1,150**	
Multi-purpose Room				
Multi-purpose Room	3,076	2,500	2,500	
Table/Chair/Riser Storage	259	400	400	
Stage/Platform	819	0	600	Health, orchestra, drumming, OT/PT programs
Campfire Kitchenette & Storage		0	50	Community after-school program
Subtotal Multi-purpose	**4,154**	**2,900**	**3,550**	
Physical Education				
Gym	3,943	3,475	3,945	Existing
P.E. Office/Storage	464	500	465	Existing
Subtotal Multi-purpose & P.E.	**4,407**	**3,975**	**4,410**	
Custodial & Restrooms				
Custodial and Receiving (1 main & 2 small)	269	400		
Receiving			200	Space Defined
Custodial Storage			150	Space Need
Custodial Closet			60	Space Defined
Custodial Closet			60	Space Defined
Custodial - BPO			100	Space Need
Outdoor Equipment Storage			100	Space Defined
Laundry/Changing			80	Space Need
Public Restrooms	1,653	870	1,200	2 story building need extra restroom
Central Building Storage	1,046	540	540	
Subtotal Custodial & Restrooms	**2,968**	**1,810**	**2,490**	
Circulation/Support/Exterior Walls				
Hallways	10,254	8,050	8,600	2 story building - stairs
Mechanical & Electrical Spaces	2,326	3,690	3,690	
Exterior Walls	969	745	880	Renewal inefficiency
Subtotal Support	**13,549**	**12,485**	**13,170**	
Total Program Square Footage	**56,318**	**59,720**	**62,500**	

* **4 Relocatables Classrooms required to house 6th grade**

Regulating Codes

2006 International Building Code
2006 International Existing Building Code
2006 International Fire Code
2006 International Mechanical Code
2006 International Fuel Gas Code
2006 Uniform Plumbing Code
2006 International Energy Conservation Code
2003 ANSI 117.1 Accessible and Usable Buildings and Facilities

Occupancy Classification(s): IBC Chapter 3

E – Educational Group / Section 305.1
Elementary School (Administration, Classrooms, * Multi-Purpose, * Gymnasium)

* See Occupancy Separation Requirements Below

Proposed Building Construction Type: IBC Chapter 6

New Construction:	Type II-B Non-Rated
Original Building:	Type V-B Non-Rated (Being Demolished)
1985 Addition:	Type V-B, Reclassify Gymnasium to Type II-B. Further analysis of the existing gym will be required to determine if the construction type can be reclassified as Type II-B.

Automatic Sprinkler Systems

E-Occupancy – Per IBC 2006 Section 903.2.2 as amended per local amendments: "An automatic sprinkler system shall be provided throughout all buildings that contain a Group E occupancy and for every portion of educational buildings below the level of exit discharge. The use of a fire wall does not establish a separate building for purposes of this section." Existing and new construction will be equipped with an automatic sprinkler system.

Occupancy Separation Requirements

Per IBC Section 508.3.1 Accessory Occupancies, Exception 2, assembly areas that are accessory to Group E occupancies are not considered separate occupancies. No separation required between assembly spaces (Multi-Purpose Room and Gymnasium) and other occupancies.

Incidental Use Areas

Per Section 508.2.2 Separation. Incidental use areas shall be separated or protected or both, in accordance with Table 508.2.

Per Section 508.2.2.1 Construction. Where Table 508.2 permits an automatic fire extinguishing system without a fire barrier, the incidental use area shall be separated from the remainder of the building by construction capable of resisting the passage of smoke.

Where required:

- Furnace room where any piece of equipment is >400,000 BTU per hour input
- Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
- Storage rooms over 100 square feet

Fire Walls

Per Table 705.4 Group E; Footnote a. Walls shall be not less than 2-hour fire resistance rated where separating buildings of Type II or V construction. Table 705.4 calls for a 3-hour wall where a fire wall is also an occupancy separation wall that requires a 3-hour separation. There are no occupancy separations required for this building.

Existing construction is Type V-B construction. New construction and gym are Type II-B construction.

A 2-hour firewall between the two types of construction shall be required.

Basic Allowable Height and Building Area: Table 503

Group E, Type V-B, per story 9,500 s.f.
Group E, Type II-B, per story 14,500 s.f.

Allowable Area Modifications: Section 506

Type V-B – Existing Building (Excluding Gymnasium)

Basic Allowable Area: $A_t = 9{,}500$

Frontage Increase:
$I_f = [F/P - 0.25]\ w/30$
$I_f = [336.75 \div 416.16 - 0.25]\ 30/30$
$I_f = [.809 - 0.25] \times 1$
$I_f = .559$

Sprinkler Increase: $I_s = 200$ percent (2)

Allowable Areas Per Story:
$A_a = \{A_t + [A_t \times I_f] + [A_t \times I_s]\}$
$A_a = \{9{,}500 + [9{,}500 \times .559] + [9{,}500 \times 2]\}$
$A_a = 9{,}500 + 5{,}310 + 19{,}000$
$A_a = 33{,}810 > 9{,}325$ actual = ok

Type II-B – New Building (Including Gymnasium)

Basic Allowable Area: $A_t = 14{,}500$

Frontage Increase:
$I_f = [F/P - 0.25]\ w/30$
$I_f = [959.25 \div 1038.66 - 0.25]\ 30/30$
$I_f = [.923 - 0.25] \times 1$
$I_f = .673$

Sprinkler Increase: $I_s = 200$ percent (2)

Allowable Area Per Story: $A_a = \{A_t + [A_t \times I_f] + [A_t \times I_s]\}$
$A_a = \{14,500 + [14,500 \times .673] + [14,500 \times 2]\}$
$A_a = 14,500 + 9,758.5 + 29,000$
$A_a = 53,258.5$

Multiple Story Increase (504.6): 53,258.5 s.f. x 2 stories = 106,571 s.f.

Total Allowable Area: 106,571 s.f. > 53,175 s.f. actual = ok

Actual Area Per Plan (North Wing and South Wing Separted with Fire Wall)

Existing Building =	9,325 s.f.
New Building (with existing gym) =	36,024 s.f. (first floor)
	17,151 s.f. (second floor)
Total Building =	62,500 s.f.

Exterior Resistance Rating Requirements – Table 601

No Requirements for Type V-B
No Requirements for Type II-B

Exterior Wall Setback/Rating Requirements – Table 602

Type V-B, Group E ≥ 10' – Non Rated
Type II-B, Group E ≥ 10' – Non Rated

Plumbing Systems: IBC Chapter 29

Minimum Number of Required Plumbing Fixtures

Students -	660 =	330 Male/330 Female
Faculty -	40 =	20 Male/20 Female
Total	=	350 Male/350 Female

Table 2902.1
Educational Facilities
Male = 350
Water closets @ 1/50 = 7 wc's Lavatories @ 1/50 = 7 lavatories
Female = 350
Water closets @ 1/50 = 7 wc's Lavatories @ 1/50 = 7 lavatories
Drinking Fountains – Male and Female @1/100 = 7 fountains

Total Required: Water Closets = 14
Lavatories = 14
Drinking Fountains = 7
Service Sinks = 1 Required

Total Provided: Water Closets = 16 girls, 8 boys w/11 urinals,
Lavatories = 22

Drinking Fountains = 26
Service Sinks = 1
There are additional uncounted water closets and lavatories in the Nurse and Administration offices.

Elevator Shaft Enclosures: IBC Section 707

A shaft enclosure constructed as a fire barrier with a minimum 1 hour fire rating (section 707.4)

Exiting IBC Chapter 10

Occupant loads of rooms are calculated based on Table 1004.1.1 and will be important to calculate to determine required exits, width of exits and posting of occupant load signs. Specific rooms to consider are as follows:

Gymnasium (Assembly) – Concentrated	1 occ/7 s.f.	= 3,945 s.f./7 = 563 occ
Multi-Purpose (Assembly) – Concentrated	1 occ/7 s.f.	= 2,500 s.f./7 = 357 occ
Interconnect Classroom (w/Folding Partition)	1 occ/20 s.f.	= 2,000 s.f./20 = 100 occ

Gymnasium requires 3 exits (table 1019.1) Panic Devise Required
Multi-Purpose requires 2 exits (table 1019.1) Panic Devise Required
Expandable Classroom requires 2 exits (table 1019.1)

All rooms greater than occupant load of 50 requires 2 exits and doors must swing in direction of travel. In addition, rooms greater than 50 occupants require posting of a maximum occupancy sign within the room.

TRUE NORTH PLAN NORTH

EXIS

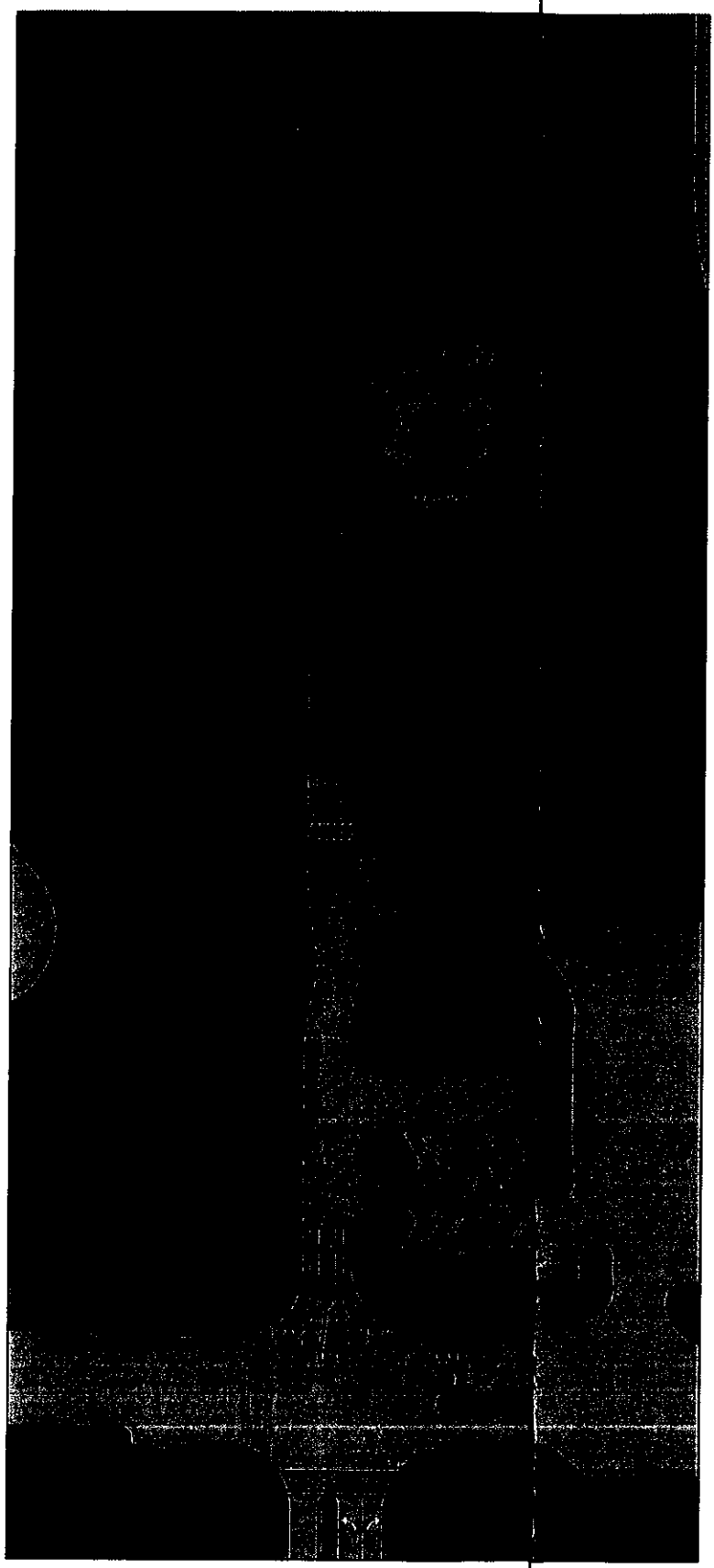
SCALE: 1"=40'-0"

SAND LAKE ELEMENTARY SCHOOL

SEPTEMBER 25, 2008

ARCHITECTURE

1231 Gambell Suite: #400
Anchorage, Alaska 99501
PHONE: (907) 349-1426 FAX: (907) 349-1325



SAND LAKE ELEMENTARY SCHOOL

SEPTEMBER 25, 2008

TRUE NORTH PLAN NORTH

CONC

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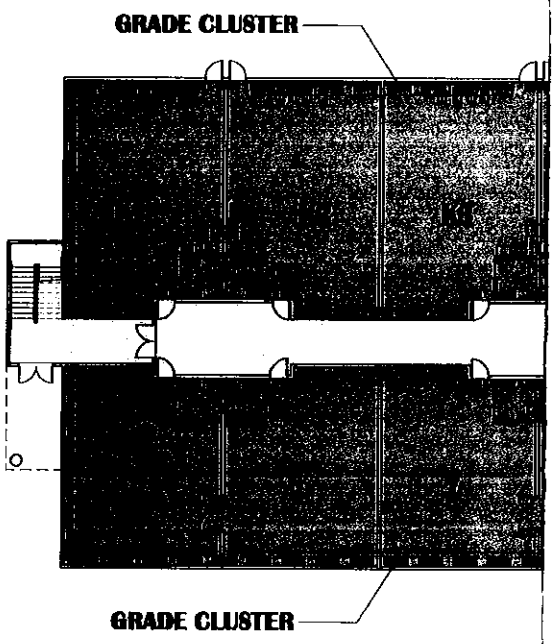
SAND LAKE ELEMENTARY SCHOOL

SEPTEMBER 25, 2008



LEGEND:

- ADMINISTRATIVE SUPPORT
- STAFF SUPPORT SERVICES
- STUDENT SUPPORT SERVICES
- CLASSROOM INSTRUCTION
- LIBRARY (IMC)
- SPECIAL EDUCATION
- FOOD SERVICE
- MUSIC
- MULTI-PURPOSE ROOM
- PHYSICAL EDUCATION
- CUSTODIAL & RESTROOMS
- CIRCULATION / SUPPORT

TRUE NORTH PLAN NORTH

C O N C

SCALE: 1/16"=1'-0"

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SAND LAKE ELEMENTARY SCHOOL

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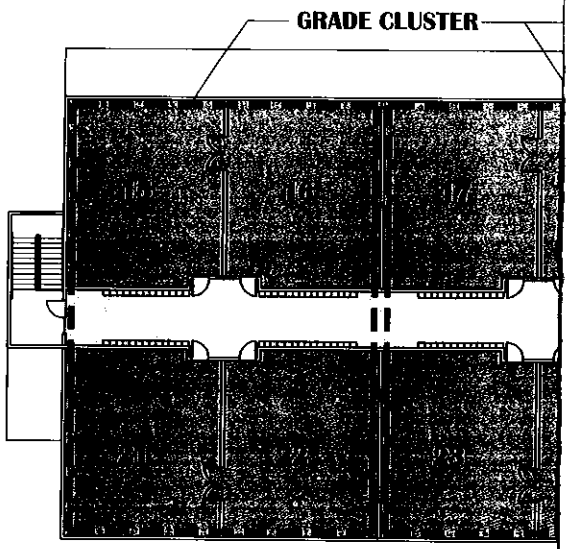

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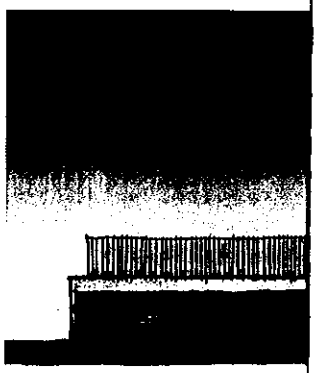

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