HB 2008

nenana
high school addition
proposal

nenana
city school district
nenana, alaska

C. LeM. KENNDY and ASSOCIATES:
environdesign

PRELIMINARY DESIGN REPORT

for the

PROPOSED NENANA HIGH SCHOOL ADDITION

Prepared by:

C. LeM. Kennedy & Associates: Environdesign
SR 10206
Fairbanks, Alaska 99701
(907) 479-3715

For:

Wayne E. Taylor
Superintendent
Nenana City School District
Nenana, Alaska 99760

PRELIMINARY DESIGN REPORT

for the PROPOSED HIGH SCHOOL ADDITION

prepared by C. LeM. KENNEDY & ASSOCIATES: ENVIRONDESIGN

for the NENANA CITY SCHOOL DISTRICT

The preparers of this Report wish to acknowledge the assistance of the following people:

Teaching Staff of Nenana Public Schools
Wayne Taylor, Superintendent of Schools, Nenana Public Schools
Jean Kalish, Principal, Nenana Public Schools
Jim Elliot, Facilities Coordinator, Department of Education, Anchorage
Margaret Clark, Teacher, West Valley High School, Fairbanks
David King, Director, Facilities Planning & Development, Irvine Unified Schools, California
Diane Duvall, School Systems Researcher

The Honorable Jay Hammond, Governor
Members of the Alaska State Senate and House of Representatives
Interested Citizens

January 5, 1981

To Whom It May Concern:

The purpose of this presentation is to provide you with the necessary information to allow you to make an informed decision regarding the funding of the proposed High School Addition for the City of Nenana, Alaska.

Nenana has two schools at present, the Gemini Elementary School, and located across a major thoroughfare, the Nenana Junior/Senior High School. The present plan proposes an addition to the junior/senior high school which would house the high school students, with the elementary and junior high students occupying the existing, renovated, Nenana School. The plan is felt necessary because the existing Gemini School is old, poorly insulated, decaying, in need of expensive repairs, too small for the student population at present, let alone anticipated student enrollments, and because its location makes its use both dangerous and expensive. The students at the Gemini School now walk to the Nenana School for buses, music presentations and multi-purpose activities. Whilst the Nenana School students are making do with their existing school and several temporary buildings scattered on their school site as the result of local carpentry shop construction, the school is in need of considerable upgrading and not large enough to meet upcoming demands. The walking from one building to another is inefficient, sometimes dangerous for the younger students and not an adequate solution for the upcoming, enlarging student population.

The Proposed Addition would provide upgraded facilities with more space for the elementary and junior high students, and a well-planned facility would house the high school students. It would satisfy all current codes and safety considerations. The plan is sensibly organized to segregate the younger children from the older whilst making access to desired areas such as music room and library easy for all. The organization of spaces allows for a large community area in the music room and library which could be used at night for gatherings with the remainder of the building sealed as desired. The Addition will be energy efficient, with future solar installations planned into the design. The Addition would be sited to allow maximum sunlight into the existing school building so that as many students as possible would be able to enjoy our precious sunlight hours.

The Proposed Addition is the result of careful consideration and consultation with the Faculty, Staff, School Board and interested parties in Nenana. The time for anticipating the problem and coming to a good solution is at hand and we trust you will give this presentation your best consideration.

Respectfully,

C. LeM. Kennedy
C. LeM. Kennedy & Associates: Environdesign

Wayne E. Taylor
Wayne E. Taylor, Superintendent
Nenana City School District

INTRODUCTION

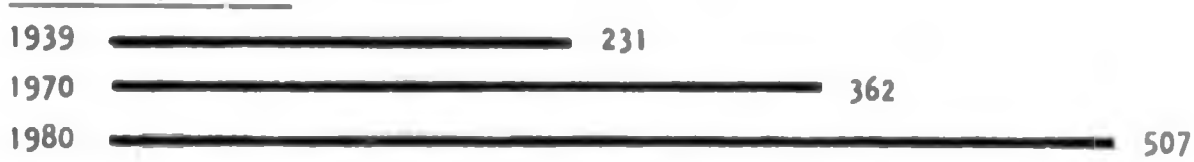
Nenana has run its own school system since 1917. Nenana is very proud of the fact that it has a quality educational system that has survived as a small city district and has not been part of the old State-Operated School or Bureau of Indian Affairs Systems.

Our present Nenana School is inadequate for our current population. It was constructed in 1955, an' enlarged in 1966, 1969, 1970, 1975, and 1977. The last two buildings were built by our Carpentry Class in order to get more room. The product of this multi-phase construction system is small buildings scattered over a large area which is inefficient by design both in energy and educationally. Our elementary, Gemini School, located at another site, was built in a similar add-on construction style beginning in 1962, and is poorly insulated with evidence of some decay.

Our future in Nenana is economically bright with anticipated growth in population due to the State-sponsored Agricultural Program, Oil and Gas Development, Timber Industry and development of the Alaska Railroad System through Nenana. We are faced with insufficient space and poor-quality facilities to meet current and projected demand, thus the need for this presentation of a Master Plan/Addition to the School System to upgrade our facilities educationally, architecturally and using modern methods of energy conservation.

POPULATION STATISTICS

Nenana's population has grown significantly historically (See Graph 1).



Graph 1

The attendance area of the Nenana City School District includes the City of Nenana plus the population living from Mile 287 Parks Highway (Clear Air Force Base) to approximately Mile 325 Parks Highway (Fairbanks North Star Borough). Forty-two percent (42%) of the students live outside the city limits of Nenana and are bused to school. At present the racial balance of Nenana is approximately forty percent (40%) Athabascan, Indian and Eskimo.

ECONOMIC BASE

Nenana has an unusually varied economic base for a small town in interior Alaska. A survey of employment by the Alaska State Housing Authority indicated there were 102 permanent jobs and 143 seasonal jobs available in Nenana and its surrounding area. Logging, transportation and construction account for the majority of seasonal work, with various government agencies providing much of the permanent jobs, including the following: Nenana City School System, City Offices, Alaska Railroad, State of Alaska Highway Department and Toghotthele Native Corporation. A number of employers at the Clear Missile Detection Site live in the vicinity. Within the City, trade and service provide many of the permanent jobs.

A Comprehensive Plan is being drawn up to provide community and area residents with a policy document to guide decisions regarding the future development of the Nenana area. Four prospective areas of growth are:

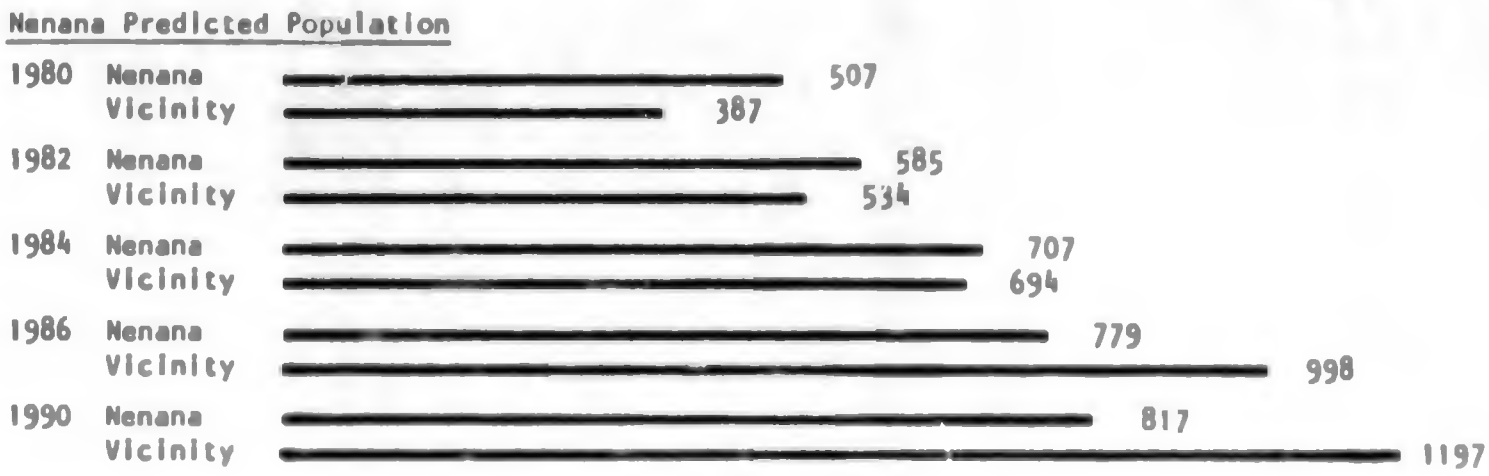
1. Agricultural Project
2. Gas and Oil Leasing
3. Timber Industry
4. Alaska Railroad

The State of Alaska has appropriated $500,000 to hire consultants and start the first phase of an Agricultural Project which will clear 46,000 acres of land in 1981 to create producing farms by the summer 1982-83. This is a substantial beginning with considerable room for expansion over the 750,000 acres of agricultural-grade soils in the Nenana area.

GSI is doing seismic studies west of Nenana with drilling beginning in 1984 and gas sales west of Nenana will be let in 1983. Another industry which is expanding is the timber industry that is owned by the Toghtthele Native Corporation, currently having contracts with the Japanese for the next five years and plans for upgrading of their services to produce finished products. Also important to Nenana is the Alaska Railroad which is seriously considering extending their line from Nenana north. All these indicators predict an expanding future for Nenana.

PREDICTED POPULATION FIGURES

Current population figures for Nenana and vicinity paint a picture of consistent, expanding growth which has been projected in Graph 2, below, to show the demands for educational facilities in the region.



Graph 2

GOALS OF THE EDUCATIONAL PROGRAM

The goals of the Nenana High School are concomitant with those established by the Nenana School District. These goals are:

To learn to think critically and act effectively through mastery of skills, knowledge, and appreciation embodied within the major achievements of human history.

To develop and to cherish to one's own cultural and historical background and gain knowledge and understanding of the culture and history of other peoples.

To develop intellectually, emotionally, morally and socially so that students can savor the joys of everyday living and approach and resolve successfully the problems of life.

To provide each student with the opportunity to develop and maintain a healthy body.

To acquire the basic preparation for various vocations and professions in society.

To develop intellectual curiosity and creativity so that students may adapt successfully to the demands of a changing world.

To provide a positive climate within which a quality instructional program may flourish.

AREA PLAN

Nenana is a small, First Class City located in Central Alaska on the southern bank of the Tanana River at the confluence of the Tanana and Nenana Rivers. It is located at Milepost 304 on the Parks Highway, sixty miles from Fairbanks by highway. The Alaska Railroad passes through Nenana and serious consideration is being given to a plan to extend the line north to the Brooks Range from Nenana. Incorporated in 1921, Nenana has long been at the hub of river supply systems to Central Alaska and beyond.


CITY
LIBRARY
EXISTING GEMINI
ELEMENTARY
EXISTING JUNIOR
SENIOR SCHOOL

SITE PLAN

The 2.86 acre site for Nenana High, Junior High and Elementary School is bounded on the north by the future main transit corridor, Second Street; on the west by "C" Street which provides vehicular access to the proposed High School Wing; on the south by Third Street, which has a high embankment; and on the east by the newly-placed public (H.U.D.) housing on "D" Street.

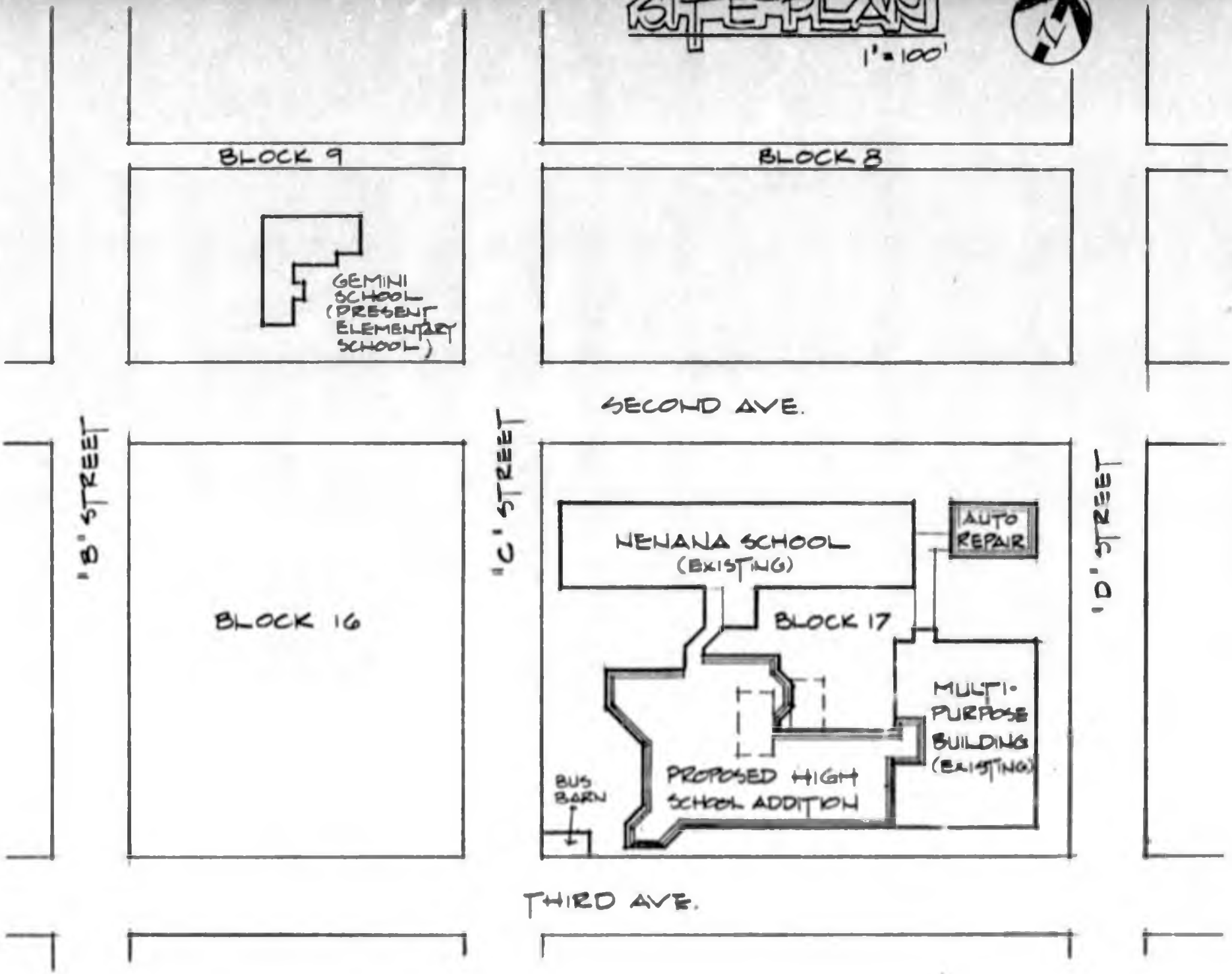
New buildings and parking will be located on the southwest and northeast of the site. Playfields will be located on the west of "C" Street, currently a public park.

New access for automobiles will be from "C" Street, at the southwest corner of the site, and from Second Street on the north. Therefore, parking and services will be concentrated along the western and northern parts of the property. This will lessen the impact on the surrounding housing areas by not using Third and "D" Streets.

Buses will continue to drop students at the North Entrance. The Auto Shop is separated from the other buildings, and this will allow provision of a visually-protected outdoor storage area and more easily separated access.

SITE PLAN

1" = 100'



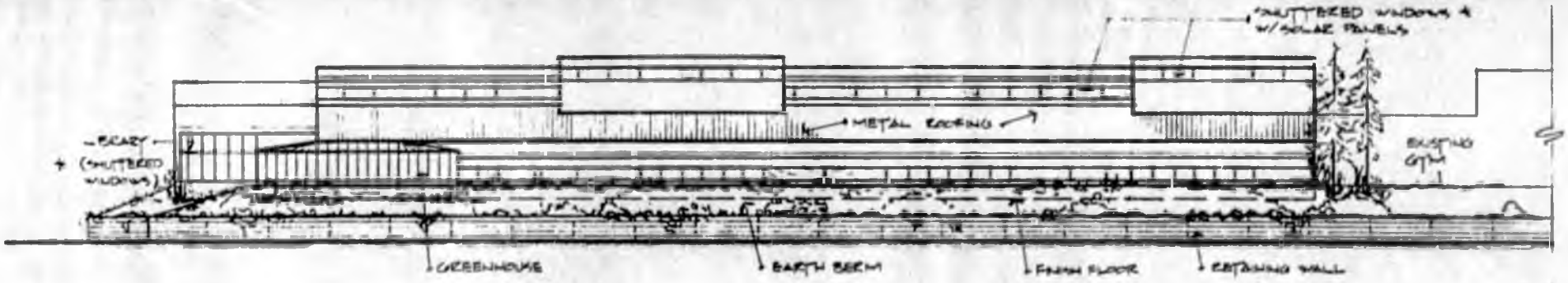
ELEVATIONS

The design intent is to create a richly varied scene of wood walls and metal ribbed roofs combined with garden courts requiring little maintenance. Although variety is seen in the individual components of the room forms, the overall effect should be harmonious, because of the consistent forms, roof lines, heights, materials and landscaping.

The glazing of windows is, as far as dictated by site and functional constraints, located on the south and this provides the cheeriest aspect for the students, whilst providing the best and most efficient energy-related location.

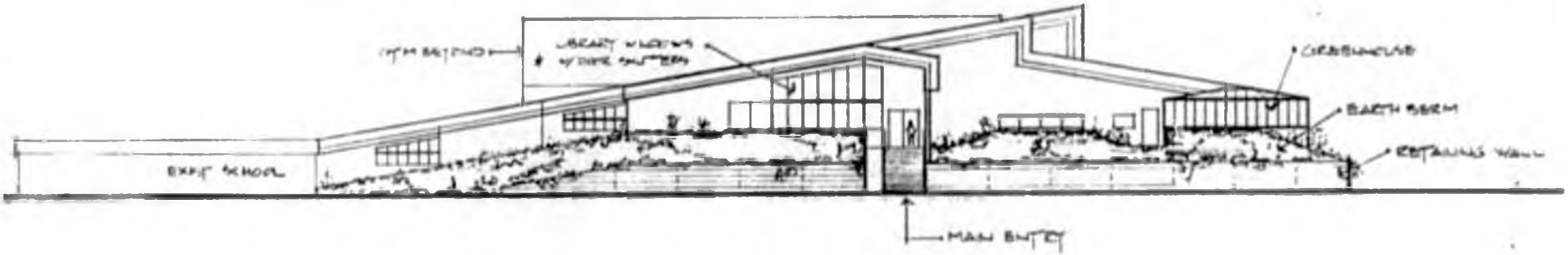
The roof slopes are such as to shed water and snow to the south and north and simultaneously admit shuttered light/heat to the corridor. They also will allow air ventilation and exhaust by natural means as air enters low, at the classroom level and can be exhausted at the clerestory level.

We have attempted to provide a good balance between constraint and variety.



SOUTH ELEVATION

1/16" = 1'-0"



WEST ELEVATION

1/16" = 1'-0"

PROPOSED

NENANA HIGH SCHOOL

NENANA, ALASKA

C. LEMARCHAND KENNEDY AND ASSOCIATES:

environdesign

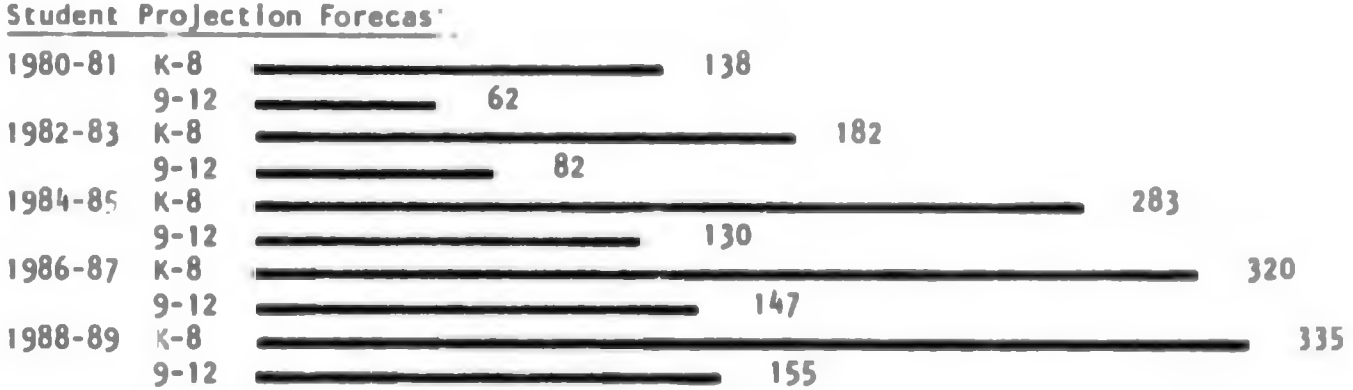
ARCHITECTURE, PLANNING, ENERGY MANAGEMENT

SR 10208, FAIRBANKS, ALASKA, 99701 (907) 479 3751

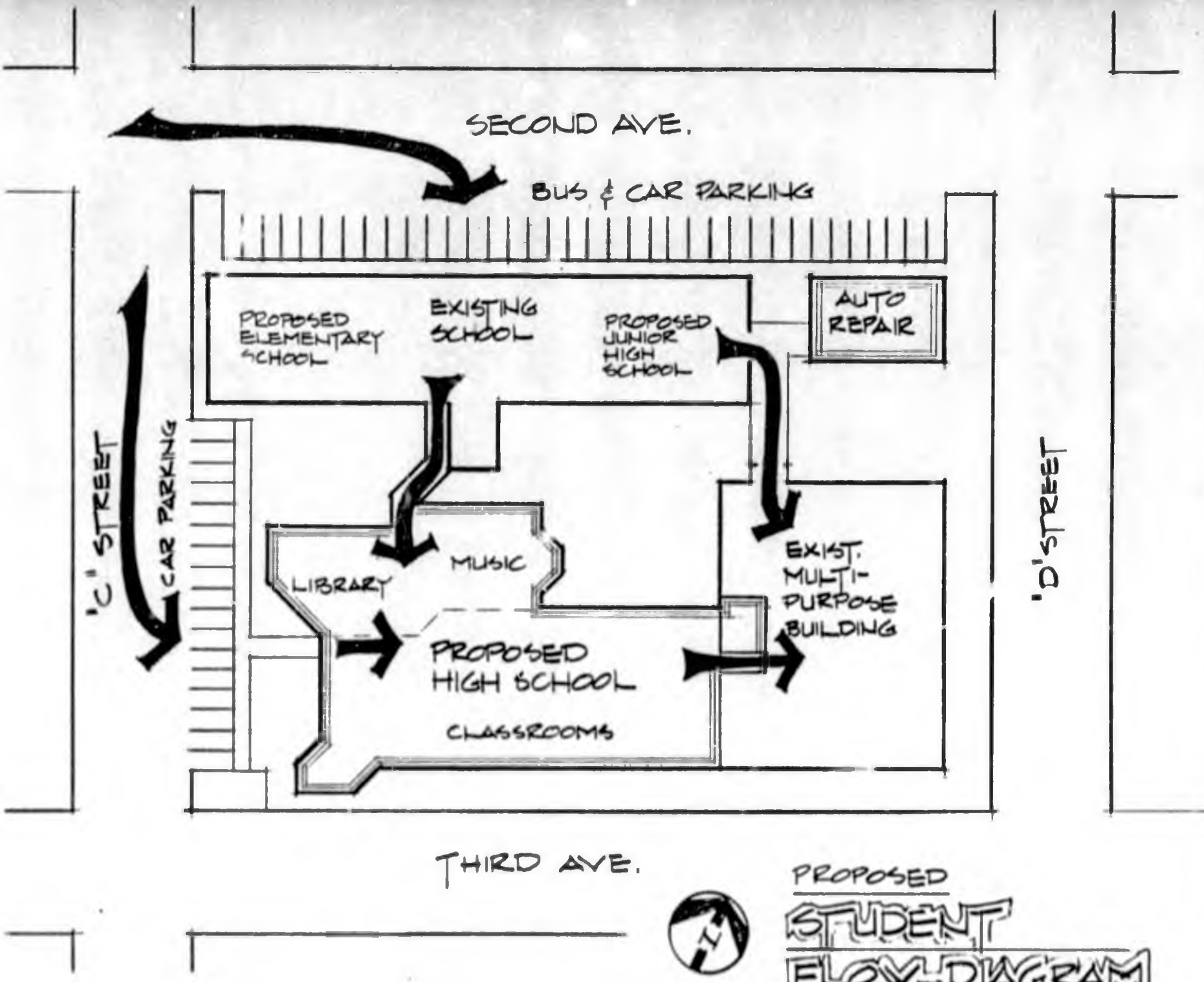
THE CONCEPT

At present elementary school students attend Gemini School, a facility in need of upgrading or replacement. Junior and high school students go to Nenana School. It is the presentation of this plan to build an addition to Nenana School to serve the community's ninth, tenth, eleventh and twelfth grades. The existing structure would be planned to suit the needs of the elementary students in one "wing" and the junior high students in another "wing" with the high school students, library, media center and administration functions in the new addition. The planning of the facility would provide high-quality educational facilities for all students with segregation by design to preclude unnecessary mixing of young students with the much older students.

Current population levels and projected increases are summarized in Graph 3, below. As current area population increases, so grows the student population. Current population estimates and projections show a fast rate of grow[illegible] through 1985 with a levelling off and a slow rate of growth in the late 1980's. By the late 1980's the area population as well as the student population should stabilize and reflect a slow, moderate growth rate. At present the City of Nenana and Nenana School District Capital Improvement Analysis has established that the future high school should have a capacity of 150 students which will then accomodate the projected growth rate for the community. To meet these needs it is imperative that this project be commenced immediately.



Graph 3



PROPOSED STUDENT FLOW DIAGRAM

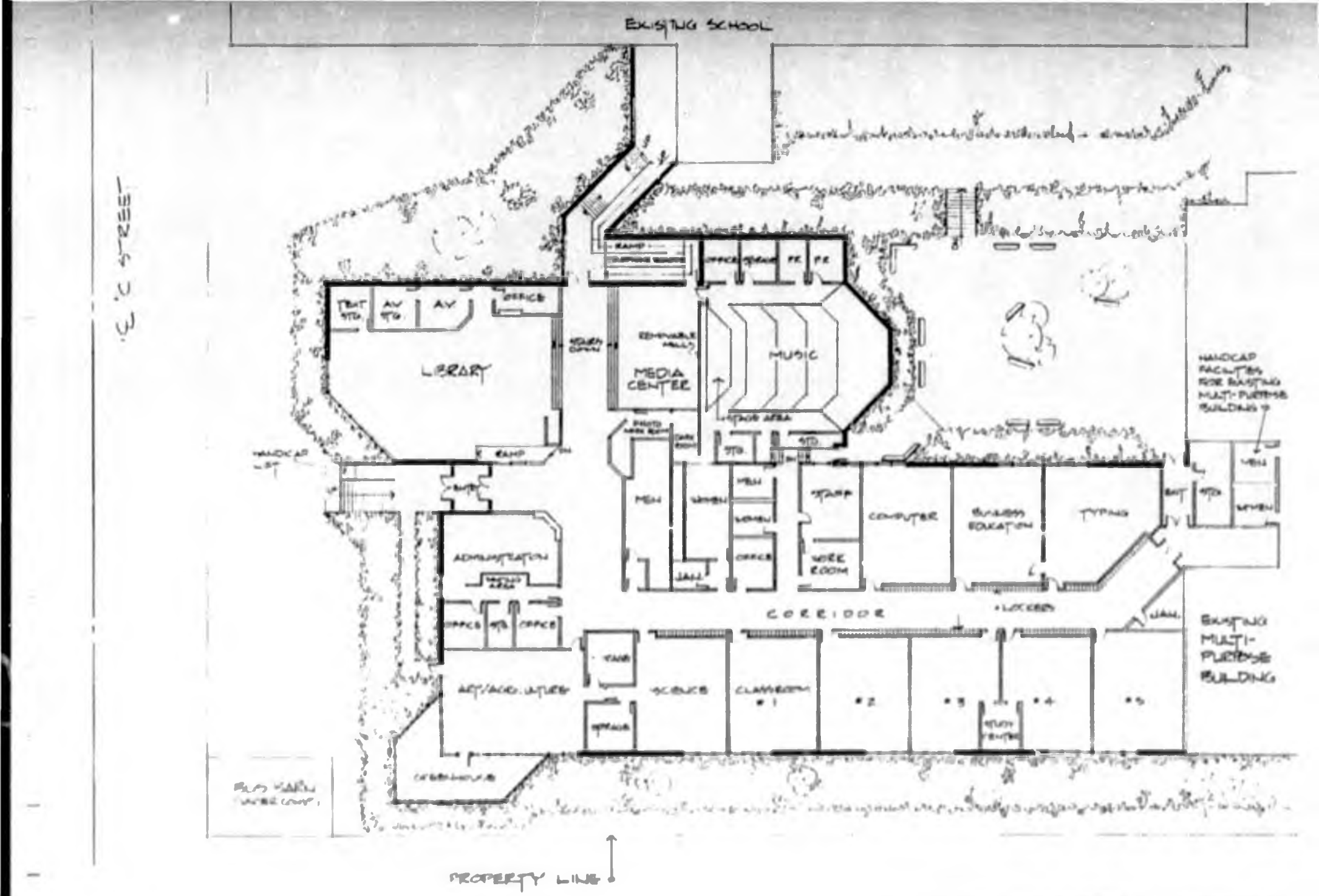
FLOOR PLAN

The plan is a modified spine concept, aligned with the existing multi-purpose Gymnasium, Home Economics and Woodworking Shop. This allows maximum southern exposure to the most rooms, easy extension of existing heat from the multi-purpose Mechanical Room, elimination of the east wall, easy access to the Multi-Purpose Building.

Those rooms not requiring direct southern exposure are located to the north. The Library also falls into this category, but is located to allow easy access from the other school grades, and also to gain western/southern exposure. The Music Room is available to other school grades (elementary, junior high) without direct involvement in the high school classroom areas. The toilets are centrally located. The plan allows for partitioning the building so as to prevent or permit controlled access to any or all parts at any time of day or night. Each has its own autonomous circulation, toilets, exiting, etc. Thus part or all of the High School may be used for night classes, or for community gatherings, without disturbing any other section of the school.

The Media Center and Music Room may be opened up to provide an audience area behind a conductor (typical orchestral system) and could also be utilized for limited stage productions. If the Library contained moveable units, then it, too, could provide more seating area for an enlarged audience. The Staff Room is centrally located in the classroom wing to provide a stabilizing influence. It can also function with the Workroom as ancillary dressing rooms for the Music Room when used as a theater.

The Administration Area, Principal's Office and Counselor's Office are located so as to provide easy access to the Entry, visitors and students. The Agriculture/Art Room shares storage space with the Science Room. Because of its occupant load, the former requires a second exit, and this is provided to grade at the West.

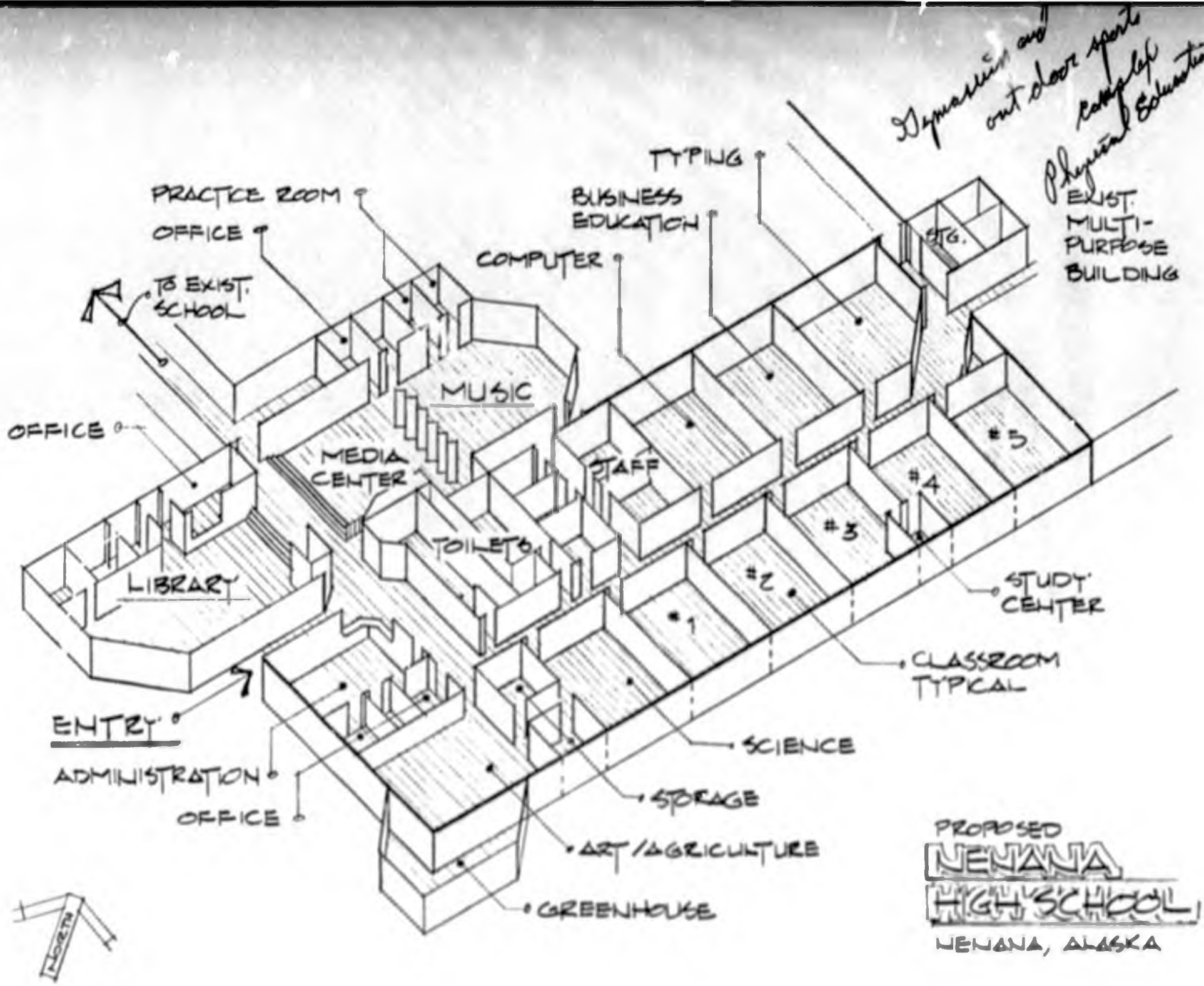


PROPOSED
UNALAKA HIGH SCHOOL
UNALAKA, ALASKA

C. LeMARCHAND KENNEDY AND ASSOCIATES:
environdesign
ARCHITECTURE, PLANNING, ENERGY MANAGEMENT
BOX 10206, FAIRBANKS, ALASKA, 99701 (907) 479 3781

ISOMETRIC PROJECTION

In this isometric "perspective" drawing, the roof is removed to enable a view down into the building. The Library, Media Center and Music Room floors are lowered slightly to give greater volumes of space and airiness to these larger rooms. These rooms are closest to the existing school where the elementary and junior high students will have their classes. The proximity of Library, Media Center and Music Room are such that the younger students will not have to cross the paths of older high school students to visit these much-used rooms. The walls between these rooms will be movable to make one large space at times of various performances. The Administration Areas, Staff Rooms and Toilets are located in the central core area, obvious to students, and thus quietly reinforcing supervision to the students. As many rooms as possible are south-facing. The rooms north of the corridor will gain sunlight from clerestory windows above the corridor.



PROPOSED

NENANA HIGH SCHOOL

NENANA, ALASKA

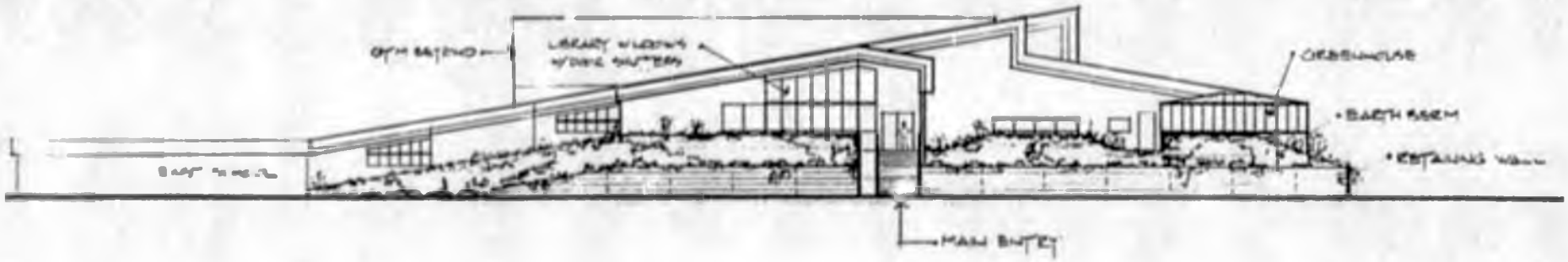
ELEVATION AND CROSS SECTION

The High School is raised on a gravel mound to the same height as the Multi-Purpose Building as required by flood-level considerations. Ramps lead to the older K-8 school for easy handicapped access. All access ramps are covered and may be enclosed as budget and desires allow.

A main consideration of this facility is the attempt to use the most modern techniques available to insure energy conservation through its lifetime. The design provides a minimum of surface area with maximum usable space, with all walls insulated heartily, looking to higher energy costs in future as a continuing reality. Exterior glazing is provided as required by codes, minimized for heat loss determinations and used wisely on southern-facing walls or where visually desirable. Insulated shutter systems are standard equipment to be used to save energy costs. The simple roof shapes are economical, easily maintained and house the mechanical spaces. Mechanical systems will utilize the latest energy conservation systems, such as heat exchange system and active solar panels to augment the boiler system.

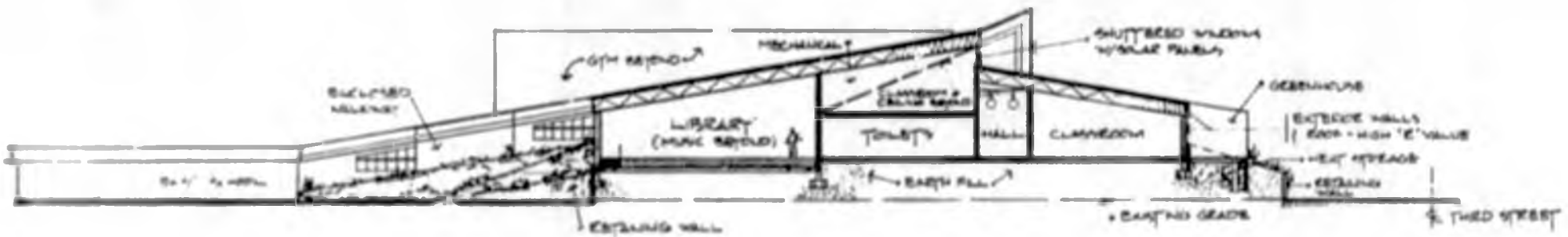
The angle of the High School roof pitch is designed to allow maximum solar gain on the southern exposure of the existing K-8 classrooms, with sunlight passing over the low roofline into the classrooms beyond. At the same time, the building is designed to use natural solar heat and light to the greatest extent possible, and to provide convective cooling without mechanical assistance.

The ceiling insulation will be a minimum of 30" thick (value R95±), using the already-available space in the ceiling framing. The walls, minimum of 12" thick (value R40±), and the floors and/or perimeter walls, will be warmed by at least R30 resistance to heat flow, to provide comfortable and efficient spaces.



WEST ELEVATION

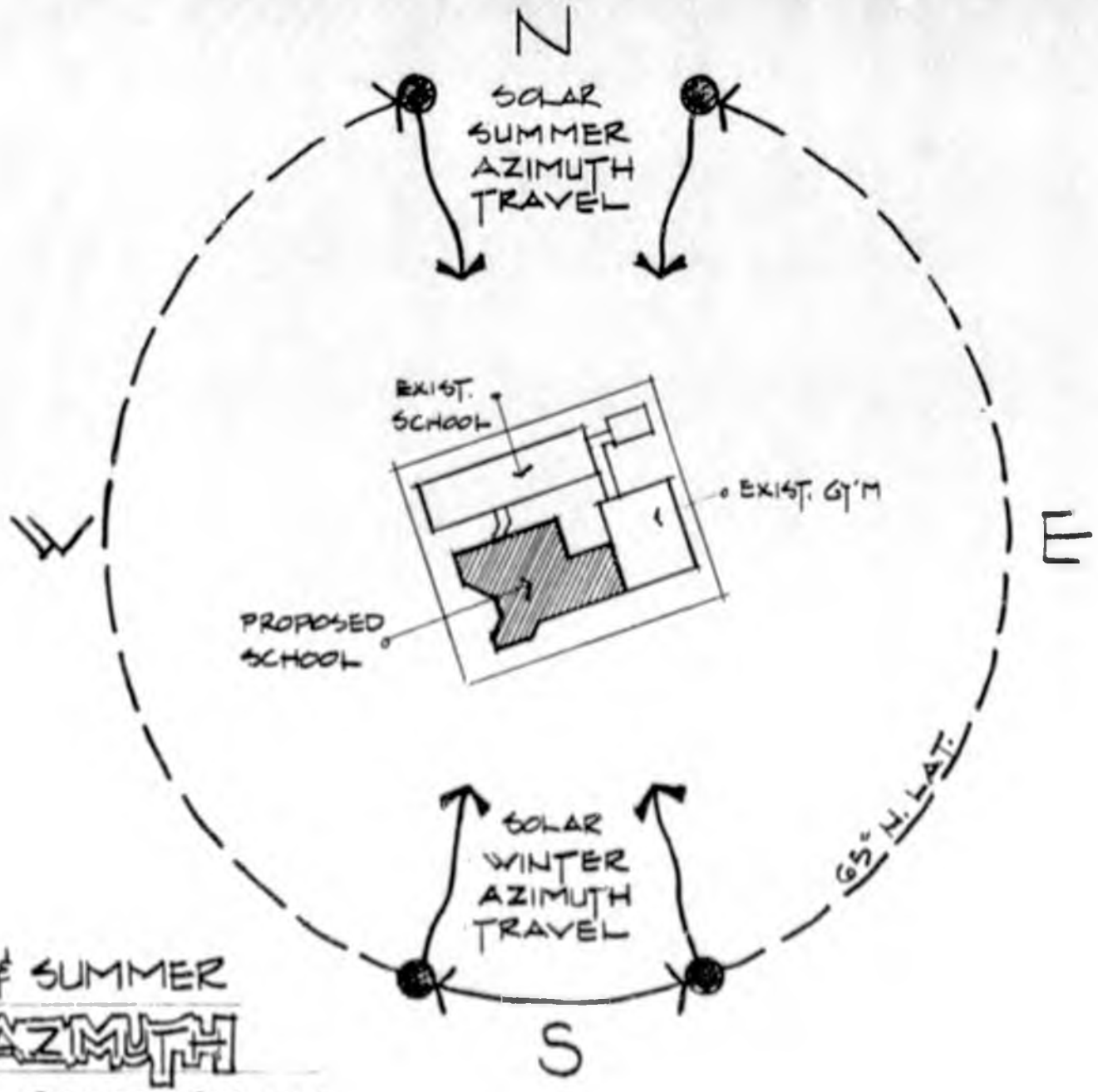
1/16" = 1'-0"



BUILDING SECTION

NENANA HIGH SCHOOL
NENANA, ALASKA

C. LeMARCHAND KENNEDY AND ASSOCIATES:
environdesign
ARCHITECTURE, PLANNING, ENERGY MANAGEMENT
FAIRBANKS, ALASKA, 99701 (907) 479-2281

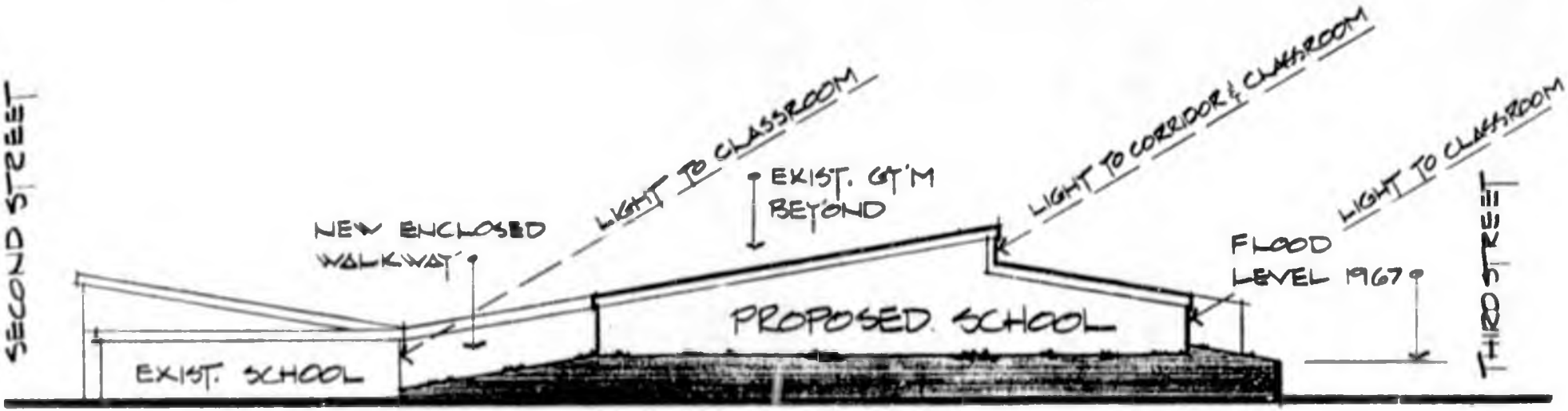


WINTER & SUMMER SOLAR AZIMUTH TRAVEL COMPARISON

(DISTANCE SUN TRAVELS ABOVE HORIZON)

BUILDING DESIGN CRITERIA

- WIND: MIN. 30 M.P.H.; SNOW: MIN. 30 P.S.F.
- A.B.S. MIN. -66° F; A.B.S. MAX. 98° F.
- * HRS. DAY'LIGHT: 3½ HRS. TO 20½ HRS.
- HEATING DEGREE DAYS /YR. IN HELENA 14,500 ±
- THAWING INDEX /YR. (* DEGREE DAYS ABOVE FREEZING) 3,000
- FREEZING INDEX /YR. (* DEGREE DAYS BELOW FREEZING) 5,000



SITE SECTION

NORTH TO SOUTH

PROGRAM OF SPACE REQUIREMENTS

Following State of Alaska space allocation standards, 150 High School students will require a new gross building area of 22,500 to 24,000 square feet, for this construction for Nenana High/Junior High/Elementary School and Community-Use Center.

Based on the educational program anticipated, the square footage has been allocated to various identifiable areas. This analysis serves as a guide for the Architectural and Educational programming during building design. However, the program of space requirements should not limit or inhibit the teachers and students as to how the spaces are actually used.

Although this program indicates assignment of all available space to specific classrooms, laboratories, studios, etc., the nature of the building will allow other space arrangements to accommodate unknown future educational programs as they evolve.

SPACE REQUIREMENTS FOR NENANA HIGH SCHOOL

Space	# of Spaces	Area/ Space	Subtotal Area	Total Area	Remarks
CREATIVE ARTS					
Music Classroom	1	1980	1980		Useable for other functions & accessible to all.
Office	1	100	100		
Practice Rooms	2	80	160		
Storage	3	100 53 32	185		
Media Center	1	768	768		Adjacent to L.R.C. to enable use of both as one large space for Concerts, plays, etc.
Photography Darkroom	1	144	144		
Photography Workroom	1	150	150		
				3487	
LEARNING RESOURCE CENTER					
Seating Stacks, Circulation	1	1806	1806		
Textbook Storage	1	150	150		
Audio Visual (students)	1	200	200		
Audio Visual (storage)	1	200	200		
Office/Workroom	1	144	144		
				2500	
HUMANITIES					
Room #1 Mathematics	1	768	768		
Room #2 English	1	768	768		
Room #3 Social Studies	1	708	708		
Room #4 Foreign Language	1	708	708		
Study Center	1	120	120		Part of room #3 & #4
				3072	

SPACE REQUIREMENTS FOR NENANA HIGH SCHOOL

Space	# of Spaces	Area/ Space	Subtotal Area	Total Area	Remarks
SCIENCE					
Chemistry, Biology, Physics, Earth Sciences	1	768	768		Combination lecture/ Lab for Chemistry, Biology, Physics, & Earth-sciences
Storage	1	168	168		
				936	
BUSINESS					
Typing	1	896	896		
Business Education	1	768	768		
Computer	1	768	768		
				2432	
SPECIALIZED					
Agriculture / Art Classroom	1	936	936		"Wet" space. Shared w/ art room.
Greenhouse	1	480	480		
Storage	1	194	194		
Room #5 Special Education Class	1	768	768		
				2378	
TECHNICAL EDUCATION					
Auto Shop	1	2000	2000		
Welding Stations	6	50	300		
Toilets	2	80	160		
Storage	1	180	180		
				2640	

SPACE REQUIREMENTS FOR NENANA HIGH SCHOOL

Space	# of Spaces	Area/ Space	Subtotal Area	Total Area	Remarks
ADMINISTRATION					
Principal	1	144	144		Counselor's Office has separate exit from Hall, Principal exits through Waiting Room.
Secretarial	1	540	540		
Waiting Area	1	120	120		
Counselor's Office	1	144	144		
Community Education Office	1	144	144		
Storage, Files	1	80	80		
				1172	
TEACHERS AREA					
Staff Room	1	256	256		
Workroom	1	256	256		
Toilets	2	96	192		
				704	
MISCELLANEOUS SUPPORT SPACES					
Toilets	2	364	728		
Circulation		2860	2860		
Custodial	1	196	196		
Lockers (space)		225	225		
Pipe Chase	1	188	188		
Mechanical	1	600	600		
Maintenance/Storage	1	130	130		
				4927	

TOTAL HIGH SCHOOL AREA	24,248 sq.ft.
Enclosed Walkways to Existing School	1,056
Enclosed Walkways to New Auto Shop from Multi-Purpose Building . . .	1,368
New Handicapped Toilets for Multi-Purpose Access	960
TOTAL AREA	27,632 sq.ft.

BUILDING METHODS AND COSTS

The new building will sit atop a large gravel mound at the same level as the newest building presently on the site, the 1973 Multi-Purpose Building. This will keep it above Tanana River flood level. Gravel is available close by and a very large quantity will be required.

The construction will be slab-on-grade floors, thick wood-frame, heavily insulated walls, using gypsum board and plywood siding, roof trusses with metal roofing.

To provide energy conservation and solar utility--light, ventilation and heat available free--all glass will be shuttered and active solar panels may be included along with an Alternate to heat a rock/gravel storage area below the whole building. With this Alternate, hot air ducting would pass below the floor in a crawl space, thereby heating the entire building.

A study is being conducted to determine if the existing heating system for the Multi-Purpose Building can be utilized in this building which may reduce the size of the new heating plant required.

Finally, enclosed ramps are integrated into the design to enable proper winter and summer functioning of the four elements of the school. The methods of construction and materials associated with this project are economical, with a good cost/value ratio, and are commonly used in the area.

PROJECT DATA AND PROGRESS SUMMARY

DATE: January 5, 1981

PROJECT: Nenana High School Addition

ARCHITECT: C. LeM. Kennedy & Associates: Environdesign

SCHEDULE

YEAR	1980				1981				1982				1983			
QUARTER	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PLANNING		XXXX	XXXX	XXXXXXXX												
DESIGN				XXXXXXX		XXXXXXX	XXXXXXX									
PLAN CHECK									XXXX							
BID PERIOD										XXX						
CONSTRUCTION										XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXX		

FUNDING

	ORIG. ESTIMATE	REVISED ESTS.
DATE	1/5/1981	
Site Acquisition	Owned	
Design	290,000	
Construction	3,948,000	
Site Work	308,000	
Equipment	400,000	
Art	20,000	
Utilities	25,000	
State Administration	145,000	
TOTAL	$5,136,000	

PROJECT DESCRIPTION

LOCATION: Nenana, Alaska

SITE ACREAGE: 2.86 acres

BUILDING AREA: 27632 sq.ft.

CAPACITY - STUDENTS: 150

GENERAL: