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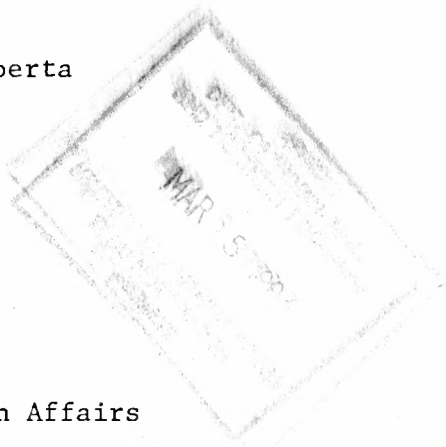
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ANALYSIS AND EVALUATION REPORT

KEHEWIN SCHOOL PROJECT

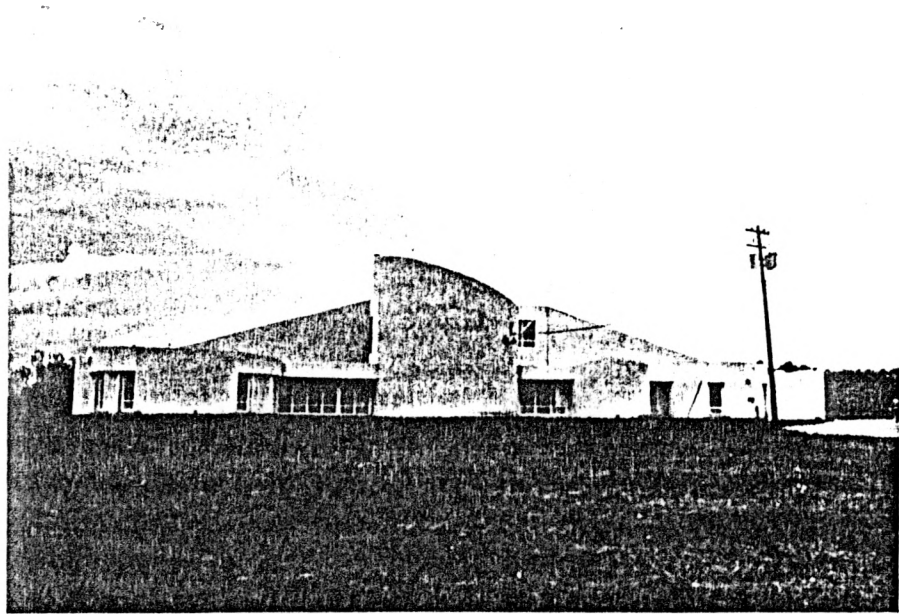
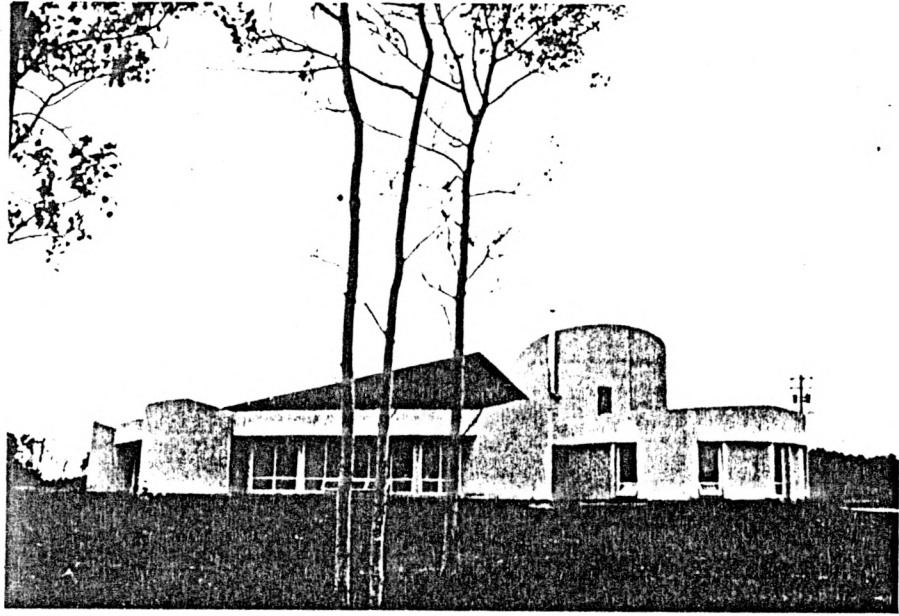
Kehewin Indian Reserve, Alberta



Department of Indian and Northern Affairs  
Ottawa  
June 1976  
(Revised)

Prepared by the Engineering and Architecture Branch  
In Co-operation with Program H.Q. and Region

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EXECUTIVE SUMMARY

Background

With encouragement and assistance by the Department, the Kehewin Indian Band has become increasingly interested in community planning and the management of community development works on their Reserve. Early in 1973, they expressed their wish to make their own arrangements for the design and construction of a new community education centre on the Kehewin Indian Reserve and, with Treasury Board authority, an agreement to transfer the funds was reached for them to plan and implement the project. The construction of the building was completed in the summer of 1975.

The building is considered a "Community Education Centre" and, in addition to three classrooms, a kindergarten and an activities room, includes community use space such as a daycare area, a community library and a clinic. The total gross area is 15,455 sq. ft. of which approximately one-third is for community use purposes.

Treasury Board authority was granted on the understanding that Kehewin would be a pilot project and that an evaluation would be made for judging the feasibility of delegating similar authority for this type of project in the future.

Summary of Observations and Conclusions

Note - The evaluation of the Kehewin experiment has tended to emphasize the problem areas and shortcomings of the new facility so as to highlight the points requiring improvement in similar arrangements of the future. For this reason, and for brevity, there is little particular mention made of the satisfactory features.

- 1) Approval in principle was obtained from Treasury Board (T.B.728482 - June 17, 1974) to allow a payment of \$460,000 from education capital funds. The submission for approval described a total estimated cost of \$729,000 with funding for the non-education components to come from other sources such as Band funds, Local Government Branch and from the Work Opportunities Program.

An agreement between the Department and the Band was signed on July 24, 1974 with the Department agreeing to contribute \$625,000 towards the project. Included in this amount was \$35,000 for architectural fees. In addition, the Department paid \$30,000 for community planning fees, \$13,500 for a school and village survey by a consultant, and \$20,600 to construct a new three-phase power line required by the school for a total of \$689,000.

The building itself, including fees for preparing contract drawings and specifications as well as for supervision, cost approximately \$713,000. Including the estimate for landscaping

and furnishings as well as the cost of community planning and electrical power, the project cost was in the order of \$835,000.

- 2) Tenders for the construction of the school were not called prior to awarding a contract, but a price was negotiated with a selected contractor. The contractor's initial price quotation was within the agreed upon total. However, through various change orders, the cost of the school exceeded the amount provided for in the arrangement by \$68,000.
- 3) The total consulting architect's fees which, in accordance with his contract with the Band, could have been in the order of \$108,000. This is considerably higher than usually incurred in the planning and construction of similar projects. Part of the fees however reflect the schedule of minimum fee structure as recommended by the Architectural Association of Alberta.
- 4) Although the consultant intended to design a school in which an "open school concept" would prevail and which would provide the proper environment for changes in teaching practices, he only partially fulfilled these objectives. The classrooms, having fixed partitions, do not lend themselves to either large or small group instruction. The library has some very interesting features, but its very location will severely affect its usefulness. One of the innovative design features is the circular



reading area surrounding the intended open fireplace. While it has great possibilities with respect to storytelling and small group discussions, for lack of adequate lighting, it cannot be used as a reading area. The activities room with the adjacent pre-school facilities offers the greatest possibility for innovation in teaching strategies. It is generally felt that the design tends to impose a traditional school system.

- 5) The school is a one-story wood frame building with drywall interior finish and stucco exterior. Doors are paint grade and fixtures are the less expensive quality. The inexpensive floor carpet is already showing serious deterioration. Exterior wall sheathing was specified as  $\frac{1}{4}$ " plywood or particle board which is too flimsy as a stucco base. While the per square foot construction cost (\$47) compares with other schools built by the Department in the same geographical area at about the same time, there is no doubt that there was less quality obtained at Kehewin for the amount of money spent.

The building marginally meets the minimum standards of the National Building Code and the applicable electrical and mechanical codes. There are features of the building, however, in addition to poor quality materials, which fall short of desired standards. For example, fire safety provisions are less than recommended by the Dominion Fire Commissioner; insufficient lighting has been provided in some areas; the exhaust air system is inadequate



and the choice and location of light fixtures are inappropriate. The as-constructed building does not meet the quality promised by the consultant's analysis.

The extensive use of curves and circles in the building shape, while interesting and possibly attractive sculpture, resulted in unnecessary high cost in construction and maintenance. Material quality was sacrificed in favour of the unusual shape and, hence, the life cycle cost of the building is expected to be high.

While Article II of the Agreement provides for the Department to approve the plans and specifications for the school, there is no evidence that this responsibility was exercised.

- 6) The Indian Band took considerable interest in the development of their new community education centre. Through involvement in the design and construction stages, the Band has developed pride in their school. Some Indian labour was used in the construction of the project and one or two workers obtained permanent employment as a result.

#### Summary of Conclusions

- 1) The Kehewin Project was sufficiently successful as a pilot project to encourage the delegation of authority to other Indian Bands for similar projects in the future.

- 2) As a learning experience, the Kehewin project pointed out the need for a better definition of the terms and conditions of the transfer of capital funds as well as a need for a better understanding of the practices and procedures to be followed in the planning and implementation of a new school project. This clearer understanding would allow better management by both the Band and the Department resulting in a better facility for the money spent.

The Provincial Government and Local School Boards enter into similar joint participation arrangements and it has been their experience that clearly understood terms and conditions of the arrangement are essential.

- 3) Arrangements in the future to transfer education capital funds to Bands should include:
  - a) A clearly described project development proposal that outlines at the pre-design stage, the functional and technical concept of the school facility and a realistic implementation plan. The proposal should also include a budget estimate and a financial funding plan.
  - b) An agreement based on the project development proposal with articles which set out the terms and conditions with respect to:
    - i) The standards and criteria to be applied including space requirements, material quality, and level of sophistication of

elements of the facility.' This would prescribe the applicable codes and safety regulations.

- ii) The technical and financial audit conditions and the approval processes at various stages.
- iii) The contract administration practices to be followed.
- iv) The commitment of funds by both the Department and the Band (both the amount and method of payment).
- v) The project administrative management practices to be followed.

HISTORY OF PROJECT DEVELOPMENT

Kehewin School Project

Alberta

HISTORY

In 1971-72, architects and engineers of the Department prepared design concepts for the Kehewin School to accommodate the enrolment at that time of 75 pupils and a projected 1976 enrolment of 95 pupils. With the approval of the preliminary design by the Band, the plans and specifications were advanced to the 90-95% completion stage in preparation for final approval and construction arrangement.

Early in 1973, the Band Council expressed their wish to have a new design prepared through their own arrangement so as to more truly reflect their culture and needs in the school building. They also requested that the necessary funds be turned over to them to carry out the project which was to include a school and three residences.

The Department contributed \$30,000 to the Band Council to cover fees for a community planning study of Kehewin and an additional \$13,500 to pay for a school and village survey. One of the elements of the school and village survey was to prepare a "project analysis" for a school at Kehewin.

Treasury Board approved the transfer of funds to the Band for the construction of a school and three residences on the understanding that it would be considered "as a pilot project to identify the feasibility of delegating authority for construction projects to Band Councils". Treasury Board also requested an evaluation of the project as a basis for judging future submissions of this type. The Band Council then hired their own architect, Douglas J. Cardinal, who had earlier produced the design concept, to produce the design and supervise the construction.

Treasury Board approval in principle was obtained for school and residences in the amount of \$460,000, chargeable to Vote 10 (Education) with an explanation that funding for the non-education portion of the project would come from a number of sources with the total project cost amounting to some \$729,000. The other sources were to include Community Affairs, Band funds, National Health and Welfare, and the Work Opportunities Program.

An agreement was reached between the Band and the Department which set forth the general terms and budget for execution of this building project. The main terms were:

- (a) "The Council will ensure that approvals are obtained of the plans and specifications from the Minister and all authorities having jurisdiction."
- (b) The Department's commitment toward the cost of the school would be \$625,000 including \$35,000 for architectural design fees.
- (c) The Band would "provide funding for furnishings and landscaping through other sources."

The building itself, including fees for preparing contract drawings and specifications, as well as for supervision, but not including landscaping or furnishings, cost approximately \$712,900. The Department contributed \$625,000 towards this cost. OK \*

A new three-phase power line feeding the Kehewin community and school was paid for by the Department at a cost of \$20,600.

The consultant's "community planning study" and "school and village survey" were paid for by the Department through contributions to the Band, at a cost of \$43,500.

The consultant's estimate to the Band for landscaping and school furnishings was \$112,000 (not including his fees for this work) which is not included for payment by the Department, and not included in the above cost figures.

The construction of the school building was completed during the summer of 1975 and officially opened for use in September of that year.



THE PLANNED AND AS-BUILT FACILITY

Kehewin School Project  
Alberta

## INTRODUCTION

The Kehewin School was originally designed in 1971-72 by the Department as a three-classroom plus one kindergarten school to accommodate the 1976 projected enrolment of 95 pupils. The school building design had a gross area of 8,965 square feet. The project requirement at that time also included two staff residences.

Mr. Douglas J. Cardinal, who was hired by the Band Council to prepare a new design for the school, prepared a project analysis (design brief) at the early conceptual stage. However, the final design deviated considerably from the consultant's conceptual plan and design brief.

The final school building design included three classrooms and a kindergarten as well as a number of ancillary areas or rooms resulting in a total gross area of 15,455 square feet. Staff residences were not included in the final project. In keeping with the recommendations of the community planning study and the school and village survey, the school building was intended to follow the "community school concept" where it would be used by the adult population and as a community use facility.

A detailed analysis of the as-built physical characteristics of the school building is described in the following sections:

- (a) Area Tabulation/Analysis
- (b) Comparison of Project Analysis (Design Brief) vs. Actual Design
- (c) General Description and Technical Analysis
- (d) Functional Analysis

AREA TABULATION/ANALYSIS

Net Area Calculation

<u>Room Name</u>	<u>Room Number</u>	<u>Area (Sq. Ft.)</u>	
Classrooms	132	711	
	134	788	
	136	820	
Activities Room	131	1,485	
Kindergarten	129	900	
Kitchen	115	171	
Daycare	124	1,033	
Sleeping	125	135	
Guidance	113	85	
	114	85	
Reading Pit	107	465	
Photo/Darkroom	110	192	
Library	111	605	
Circulation Desk	112	65	
Receiving/Waiting	116	312	Clinic 956
Treatment	117	148	
Dentist	118	108	
Office	119	126	
Examination	120	180	
Office	121	82	
Stenos/Waiting	138-141	282	
Principal	140	122	
Lounge (Staff Room)	142	264	
		<hr/>	
		9,164 sq. ft.	
TOTAL NET AREA	-	9,164 sq. ft.	
TOTAL GROSS AREA	-	15,455 sq. ft.	

COMPARISON OF EDUCATIONAL VS. NON-EDUCATIONAL NET AREAS

EDUCATIONAL NET AREAS

<u>Room Name</u>	<u>Room Number</u>	<u>Area (Sq. Ft.)</u>
Classrooms	132	711
	134	788
	136	820
Activities Room	131	1,485
Kindergarten	129	900
Kitchen	115	171
Stenos/Waiting	138-141	282
Principal's Office	140	122
Lounge (Staff Room)	142	264
Project Room & Library	108-112	670
Sub-Total		6,213
% of Educational <u>Net</u> Area/Total Net Area		68%

COMMUNITY USE NET AREAS

Reading Pit	107	465	
Photo/Dark Room	109-110	192	
Guidance	113	85	
	114	85	
Daycare	124	1,033	
Sleeping	125	135	
Receiving/Waiting	116	312	Clinic 956
Treatment	117	148	
Dentist	118	108	
Office	119	126	
Examination	120	180	
Office	121	82	
Sub-Total		2,951	
% of Non-Educational Net Area/Total Net Area		47%	

NOTE: Based on net areas, the student "educational" function comprises 68% of the building, while "community use" functions comprise 32%, however, some of these areas are shared.

Based upon a projected pupil enrolment of 95 in 1976:

Total (Gross) Area Per Pupil	=	$\frac{15,455}{95}$	=	163 sq. ft.
Total Net Area Per Pupil	=	$\frac{9,164}{95}$	=	96 sq. ft.
Educational Net Area Per Pupil	=	$\frac{6,213}{95}$	=	65 sq. ft.
Non-Educational Net Area Per Pupil	=	$\frac{2,951}{95}$	=	31 sq. ft.
Net-to-Gross Ratio of Building	=	$\frac{9,164}{15,455}$	=	59.3%

#### OBSERVATIONS

1. The efficient arrangement of space for a building of this size usually provides a net/gross ratio of at least 65%. The actual ratio of 59.3% indicates a space wastage in the layout of the building.
2. The gross area per pupil of 163 sq. ft. is considerably higher than average for a pupil education facility. However, as this building was also designed as a community facility and for adult use, the comparison of this feature with other schools is not really valid. The educational area compares favourably with other school buildings constructed by the Department.

PROJECT ANALYSIS (DESIGN BRIEF) VS. ACTUAL DESIGN

In the early conceptual stage, the consulting architect prepared a project analysis, sometimes called a design brief, to explain the proposed building concept to his client. The following is a comparison of the school as it was designed and built with the building that was envisaged and described in the consultant's "project analysis" to the Band Council.

PROJECT ANALYSIS

Classrooms

Unit Capacity: 15 to 25 pupils  
No. of Units: 3  
Net Area Per Unit: 800 sq. ft.  
Total Net Area: 2,400 sq. ft.

- Internal acoustical treatment must be provided to minimize noise levels generated inside room to permit separate group projects without interference.
- Normal ceiling height is acceptable.
- Windows should be large, openable and fitted with blackout blinds for slide projection. Sills must be low to suit age of children.
- Daylight should be admitted as far as possible.
- Artificial lighting should be soft, warm and indirect, and provide general illumination of 70 to 100 ft. candles at the working level. Incandescent lamps are preferred to fluorescent lighting.

AS-BUILT

15 to 25 pupils  
3  
820, 788, 711 sq. ft.  
2,319 sq. ft.

- There is no acoustical treatment except for the carpet on the floor.
- The ceiling slopes up from a height of 7'-0" to a peak of 24'-0".
- The windows are felt to be too low. During the winter when snow falls in front of them, they will be difficult to open. There are no blackout blinds.
- There are only 3 windows in each room, and the shape of the classroom does not permit good daylighting for part of each room.
- Artificial lighting is felt to be harsh, cold and direct and provides general illumination of approximately 50 ft. candles. The semi-circular alcove is, further, substantially darker than this. Fluorescent lighting fixtures are provided (actually fluorescent is a better approach than incandescent but the type of fixture and lamps are not considered acceptable).

PROJECT ANALYSIS

Classrooms - Con't.

- Fixtures must be durable and easily washable.
- Wall finishes must be capable of receiving displays, charts, etc.
- Chalkboard - 4'-9" high, min. 12'-0" long, with a section ruled for writing.
- Tackboard - 4'9" high, all available surfaces.
- Ventilation 800 cfm.

AS-BUILT

- The light fixtures are extremely difficult to wash and re-lamp due to their height.
- Wall finish is painted gypsum board which is easily damaged by displays.
- Chalkboard - 4'-0" high, 14'-0" long, sometimes less, no ruled section.
- Tackboard only 2 - 4' x 4' units provided.

Activities Room (131)

Unit Capacity: 25 students or 150 persons

Net Area: 1,600 sq. ft.

- Provide sink with hot and cold water, and a wash-hand basin, with hot and cold water.
- Artificial light must be shadow-free and glare-free, and a uniform level of 100 ft. candles. Switching must be possible in 2 circuits to allow for a division of the room into two parts.
- Acoustical materials should be used wherever possible.
- All surfaces should be designed for heavy use, and must be easily washable. Walls must be capable of receiving displays.
- Counter surface at least 12'-0" long.
- Chalkboard at least 12'-0" long with a section scored for music 4'9" high.

25 students or 150 persons

1,485 sq. ft.

- None in this room.
- Approximately 50-60 ft. candles.
- Separate switching not provided.
- No acoustical treatment provided except for carpet on floor.
- Walls are painted gypsum board and do not meet this requirement.
- No counter provided.
- 12'-0" long, 4'-0" high, no scoring provided.



PROJECT ANALYSIS

Activities Room - Con't.

- Tackboard, all available walls, 4'-9" high.
- Stage built in 2-6" tiers, 10'-0" wide.

AS-BUILT

- Two panels 4'-0" x 4'-0" provided.
- Shown on plans, but not provided.

Kindergarten (129)

Unit Capacity: 20 to 25 children  
Net Area: 1,000 sq. ft.

- South and east facing locations are preferred for the abundance of sunlight.
- 8'-6" is adequate for ceiling height.
- Windows should be large, openable and with low sills (24 inches) to suit the height of children.
- French windows are preferred with shading devices.
- Provide sink with hot and cold water.
- Provide drinking fountain of suitable height.
- Wall finishes must be capable of receiving displays, charts, etc.
- Considerable attention must be given to the use of varying textures on floor and walls.
- Tackboards on all available walls.
- Counter 15'-0" long with cupboards below and mirror above.

20 to 25 children  
900 sq. ft.

- Windows face northwest.
- Here too there is a peak of approximately 20'-0".
- See above, under Classrooms.
- Not provided; the windows are the same as elsewhere.
- None provided.
- None provided.
- Painted gypsum board is not suitable and is easily damaged.
- Floor is all carpeted, walls are all gypsum board.
- Tackboards called for only on 75% of the folding partition, but none was provided.
- None provided.

PROJECT ANALYSIS

AS-BUILT

Kindergarten - Con't.

- Lockable cupboard 12" deep, adjustable shelves, 6'-0" high, for supplies.
- Note that an outdoor play area is an important extension of the kindergarten. It should be located on the sunny and weather-protected side of the building, and at least 2,000 sq. ft. in area - a covered portion of the play area will allow outdoor play during light rain.

- None provided.
- Landscaping not yet installed at time of visit. No provision was apparent for a covered play area.

Washrooms, Cloakroom and Outdoor Storage

Kindergarten (126, 127, 128)

Net Area: 200 sq. ft.

- The storage area will be used for outdoor play equipment.
- The washroom will provide toilets and washbasins of a suitable size for very young children.

250 sq. ft.

- There is no place for storage in the unit. All the space will be taken for coats and a vestibule.
- No such fixtures are provided anywhere in the building.

Resources Centre,  
Including Reading Pit (107, 111)

Net Area: 800 sq. ft.

- Ceiling height - normal.
- Windows in all areas are very desirable, with low sills and openable. Access to the outdoors may be provided by floorheight windows.

Resource Centre: 575 sq. ft.  
Reading Pit: 465 sq. ft.  
1,040 sq. ft.

- These areas are under the roof peak, with ceiling 24' high.
- These areas are in the center of the school so there are no windows and no direct access to outdoors.

PROJECT ANALYSIS

AS-BUILT

Resources Centre - Con't.

- General lighting must be indirect, glare-free, soft and 100 foot candles in all areas. Daylight is desirable.
- Acoustical materials for all surfaces.
- Walls must be suitable for display.
- The Resources Centre must be central to all learning areas of the school and away from noisy areas.

- The lighting in the Reading Pit is very dark, approximately 20-30 foot candles. No daylight is provided there.
- No acoustical materials other than carpet on floor.
- Painted gypsum board walls are not suitable for displays.
- The Resources Centre is in effect part of the corridor leading to the classrooms and is therefore neither quiet nor "secure". It is evidently now intended to put this in the "Workroom".

Teaching Materials Preparation  
(Workroom and Photo/Darkroom)  
(108, 109, 110)

Unit Capacity: 2 to 4  
Net Area: 800 sq. ft.

- Ceiling height 9'-0" preferable in work areas, 7'6" minimum in storage and Photographic Darkroom.
- Noise from this area must be contained so as not to disturb adjacent learning areas, through the use of soundproofed walls and doors and acoustical ceilings.

2 to 4  
875 sq. ft.

- In the Workroom Area, there is a peak of 24'-0".
- No acoustical ceiling provided; this space is completely open to the "Library" and above low partition, to the Reading Pit.

Guidance Room (113, 114)

Unit Capacity: 2 to 6  
No. of Units: 2  
Net Area Per Unit: 70 sq. ft.  
Total Net Area: 140 sq. ft.

- Need built-in writing counter 18" deep, with 12" shelf below.
- The room must be designed for complete privacy. Outside noise should be kept to no more than 35 db.

3 to 4  
2  
85 sq. ft.  
170 sq. ft.

- None provided.
- One room has no door, i.e., it has neither privacy nor quiet, although adjacent to the Reading Pit.

PROJECT ANALYSIS

Clinic - Examination and Treatment Room  
(120, 117)

Unit Capacity: 4  
Net Area: 450 sq. ft. including  
Recovery and Washroom

- Ideally, exhausted air from this room must not be recirculated.
- Provide general lighting of 100 foot candles, incandescent and shadow free.
- All finishes must be heavy-duty stain-resistant and easily washable, and impart a feeling of comfort.
- Outside noise reaching this room must not exceed 40 to 50 db. Acoustical privacy for the patient is important; normal conversational voices in this room must not easily be heard outside.

AS-BUILT

4  
Treatment - 148 sq. ft.  
Examination - 180 sq. ft.  
Washroom - 36 sq. ft.  
364 sq. ft.

- No exhaust provided, air passes freely to rest of building through vent grilles. Note: Recovery Room deleted. Probably this function will be served by the Treatment Room.
- General lighting is only 40 foot candles and is fluorescent.
- No special finishes provided, only painted gypsum board (3 coat Aklyd).
- No acoustical or soundproofing treatment provided; ventilation grilles permit noise and voices to pass freely between adjacent rooms.

Clinic - Reception and Waiting (116)

Unit Capacity: 4  
Net Area: 100 sq. ft.

6  
300 sq. ft.

Clinic - Dental Room and Laboratory (118)

Unit Capacity: 3  
Net Area: 120 sq. ft.

- A Laboratory facility will be used for miscellaneous types of Dental work and for the storage of Dental and Laboratory supplies.
- General lighting in both spaces to be 100 foot candles.

2  
108 sq. ft.  
  
- There is no Laboratory indicated.  
  
- General lighting is approximately 35 foot candles.

PROJECT ANALYSIS

Clinic - Dental Room and Laboratory - Con't.

- Work counter in Dental Room minimum 10'-0" long, 18" wide.

AS-BUILT

- Work counter is 5'-0".

Clinic - Isolation Room

Net Area: 150 sq. ft.

- This room was deleted as was the Recovery Room. Instead of these rooms, two offices are shown near the Examination Room.  
Office - (119) Area 126 sq. ft.  
Office - (121) Area 82 sq. ft.  
This is probably for the use of the doctor, the dentist and/or nurse.

Day Care Centre (124)

Unit Capacity: 10  
Net Area: 1,000 sq. ft.

- 8'0" or 8'-6" ceiling height is acceptable; variations may be done to create interest and to identify some specially intimate parts of the room.
- Finishes must be durable and easily washable. Wall finishes must be capable of receiving displays.
- Tackboards, all available locations.
- Storage cupboard in sleeping area.
- Provide outdoor play areas similar to Kindergarten.
- South and east facing locations are preferred.

10 to 15  
1,168 sq. ft.

- The ceiling height slopes up from 7'-6" to a peak of 24'-0".
- Practically speaking, there is only the movable partition which can receive displays. Most of the other walls, which are painted gyproc, are covered by windows, doors or view panels.
- Provided on part of movable partition only.
- None provided.
- No provision indicated for special outdoor play area.
- Windows face west.

PROJECT ANALYSIS

AS-BUILT

Principal's Office (140)

Unit Capacity: 3  
Net Area: 100 sq. ft.

2 to 3  
106 sq. ft.

Note: The Principal's Office is in the area which was shown as Storage on the drawings. Thus the Principal's office conforms to the Project Analysis in size but with a different interior design than indicated there.

General Office and Waiting (138 -141)

Unit Capacity: 5  
Net Area: 200 sq. ft.

5  
282 sq. ft.

- Carpet is preferred on the floor for acoustical reasons.
- Other finishes should preferably be sound-absorbent.

- Provided.
- None provided.

Staff Room and Parent's Lounge (142)

Unit Capacity: 6 to 8  
Net Area: 200 sq. ft.

6  
264 sq. ft.

- Windows are desirable and should preferably face natural outdoor areas towards the north.
- (No counter called for)
- The room must be free of loud exterior noises.

- Windows face east and will not give good lighting since they are away from the seating area.
- There is a counter with sink not shown on working drawings but provided under C.O.8.
- This space was shown as an alcove open to the corridor but an enclosure was provided during construction (C.O.5).

PROJECT ANALYSIS

AS-BUILT

Kitchen (115)

Unit Capacity: 2

Net Area: 150 sq. ft.

- Provide door swinging in with a view panel.
- Provide hatches into Day Care Centre and Kindergarten.

2

171 sq. ft.

- Door swings out and has no view panel.
- Hatches are into Kindergarten and Activities Room.

OBSERVATIONS

It appears that although considerable time and effort were spent by the consultant in preparation of the design brief, with an additional fee for this, for one reason or another, many of its recommendations were ignored or departed from. The most logical reason for this would appear to be to reduce costs. Thus again, the desired quality of the building, as recommended by the consultant himself, has apparently been sacrificed in order to achieve an expensive building shape which has limited functional justification.



GENERAL DESCRIPTION AND TECHNICAL ANALYSIS

1. Site Data

The soil profile generally consists of 0-1 feet of organic top soil underlain by a till composed of pebbles, silt, sand and clay. Unconfined compression tests of this soil ranges from 3,140 p.s.f. to 16,700 p.s.f. with an average of 8,300 p.s.f.

2. Utilities and Landscaping

- (a) Landscaping - Not included in contract and to be done separately.
- (b) Power Supply - At the time of the site examination, the school was fed single phase power, however, Alberta Power was constructing, under separate contract, a new three-phase power line to the community which would also serve the school. The school is wired for three-phase 120/208 volts. The 400A main service is fed underground with copper conductors from a pole-mounted bank of 3 x 25 KVA transformers about 40 feet from the building. The service is considered adequate for the load.
- (c) Water supply and Sewage Disposal - Water is trucked from a pumphouse near the lake to five storage tanks located in the crawl space of the school. Limited groundwater aquifers within the glacial drift on the Reserve is likely high in iron and dissolved salts.  
Sewage is disposed of through a concrete septic tank and field.

3A. Architecture (General Description)

Structure

This school is a one-story building except for the mechanical room which is on the second story. The structural framing is wood joists, glulam beams, and round steel posts. The exterior semi-circular protruberances have 2" x 4" stud walls supporting the wood roof joists.

Design Live Loads

Roof 33 p.s.f.

Floors (including partitions) 70 p.s.f.

Wind Loads - N.B.C. 1970

Foundations

Strip footings with a design bearing pressure of 5,200 p.s.f. all around the building perimeter, enlarged to receive wall pilasters supporting beams and posts above.

Spread footings with a design bearing pressure of 7,000 p.s.f., located in the building interior, receive concrete posts in the crawl space which support the beams and posts above.

Crawl Space

4 to 5 feet in height over entire building, with wood floor over it.

Exterior Walls (typical)

Stucco ( $\frac{3}{4}$ ").

Stucco wire (C.S.A. A82.30).

Building paper (CGSB 9-GP-2).

Sheathing ( $\frac{1}{2}$ " plywood or chipboard).

2" x 4" studs at 16" O.C.

Batt insulation (R-10, 3½").

Vapor barrier (4 mil polyethylene film).

Drywall (½") (C.S.A. A82-27).

### Roof

Over the Classrooms, Activities Room, Kindergarten and Day-Care area, the roof has a 3:12 slope and is as follows:

Asphalt shingles (C.S.A. A 123.1, low slope).

2 layers of rigid insulation (1½" assumed).

Sheathing (5/16" spruce plywood or 3/8" particle board).

Wood joists (2" x 10" at 16", typical).

Drywall (½").

The remainder of the roof is flat, as follows:

Tar and gravel roofing.

Sheathing (5/16" spruce plywood or 3/8" particle board).

Wood joists (2" x 10" at 16" typical).

Insulation batts (R-12, 4").

Vapour barrier (4 mil polyethylene).

Drywall (½").

### Finishes

#### Classrooms

Floor: carpet.

Base: rubber base.

Walls: painted ½" drywall (3 coat alkyd).

Ceiling: height slopes from 7 feet to 24 feet. Spraytex on ½" drywall.

- Chalkboards: approximately 56 square feet provided, acrylic finish baked on  $\frac{1}{2}$ " high density particle board.
- Tackboards: specified as  $\frac{1}{4}$ " thick cork surface bonded to  $\frac{1}{4}$ " particle board; actual (32 square feet provided) appeared to be  $\frac{1}{2}$ " fiber board covered with jute fabric.
- Cabinet Work: 15' - 2" counter with sink, to A.W.M.A.C. custom grade.

#### Washrooms

- Floor: ceramic tile (not seamless as specified).
- Base: rubber base (not seamless as specified).
- Walls: drywall, painted (not epoxy as specified).
- Ceiling: height 9' - 1 $\frac{1}{2}$ ".  
painted 5/8" fire-rated drywall.

#### Corridors

- Floor: carpet.
- Base: rubber base.
- Walls: painted  $\frac{1}{2}$ " drywall.
- Ceiling: height varies from 25' - 4" to 7' - 2" under air plenum. Spraytex on  $\frac{1}{2}$ " drywall, with painted  $\frac{1}{2}$ " drywall under plenum.

#### Offices

- Floor: carpet.
- Base: rubber base.
- Walls: painted  $\frac{1}{2}$ " drywall.
- Ceiling: height 9' - 1 $\frac{1}{2}$ ", Spraytex on  $\frac{1}{2}$ " drywall.

Partitions

Fixed

2" x 4" studs with  $\frac{1}{2}$ " gypsum board (changed to plaster in smaller rooms during construction).

Operable Partitions

Equal to Acoustic-Seal 40, model 400 by Modernfold of Canada.

Panels finished with vinyl-coated fabric with chalkboard to cover approximately 25% of length, and tackboard on remainder (not provided).

Lockers

None provided.

Toilet Stalls

Two metal toilet stalls in Girls' Washroom; one stall plus two urinals in Boys' Washroom.

Other Toilets

Small washrooms in each Classroom and in the Kindergarten, Day-Care Centre and Clinic.

Windows

Fixed glass above with bottom-hinged sash, opening out, below; to minimum standards of A.W.M.A.C.,\* and treated with clear wood preservative.

Borrowed Lights

Wood-framed units to A.W.M.A.C. standards.

Glazing

Glass: conforms to C.G.S.B. 12-GP-2.

Windows: sealed double-glazing units.

Borrowed Lights: single glazed with 6 mm. clear glass.

\* A.W.M.A.C. - Architectural Woodwork Manufacturers Association of Canada

Doors

Generally wood as per A.W.M.A.C., "Custom Grade".

Entrances:

Double doors 3' - 0" x 7' - 0"

Panic hardware

Wood, solid core, half-glazed.

3B. Architectural (Technical Analysis)

There is extensive use of curves and circles in the building shape and form and the roof line is irregular with a 3:12 slope over part of the building and flat over the remaining area. Although this type of architecture is interesting and attractive as "sculpture", it causes difficulties and unnecessary high cost in design and construction.

Most walls and partitions, although vertical, are curved or circular in plan, making wood framing and clad finishing difficult and expensive.

Some reflections of this are:

- The actual cost for drywall was more than twice the original estimate (CO 10 - \$35,150).
- In the smaller rooms, it was necessary to change to plaster during construction of the partitions.
- The top and bottom plates of partitions had to be fabricated from two layers of  $\frac{3}{4}$ " plywood.
- The curved foundation walls were difficult and costly to form.
- Two roof types were necessary; asphalt shingles on the slopes and tar and gravel on the flat portion. Ceilings slope in some rooms to a peak of 24'-0".

In comparison with other nearby schools constructed on Indian Reserves in Alberta and Saskatchewan at about the same time, the materials used in the Kehewin project are of lesser quality and grade. Where masonry and aluminum windows, etc. were used in the other schools, Kehewin is constructed of wood frame, gyproc interior, stucco exterior and wooden doors and windows. Even so, the other schools compared in cost suggesting that the Kehewin design sacrificed material quality for architectural shape and form. Some examples which demonstrate the level of material quality and grade are:

- No acoustic treatment is provided anywhere except for carpet on floors. The textured paint on the drywall ceilings has no significant acoustic value as compared to mineral fibre acoustic tile usually provided on ceilings in schools.
- Doors, other than the main entrance doors, were not required to be solid core as usually provided for in other schools. Doors are paint grade.
- The exterior wall sheathing is specified as  $\frac{1}{4}$ " plywood or particle board which is considered too flimsy as a stucco base.
- The roof sheathing of  $\frac{5}{16}$ " spruce plywood or  $\frac{3}{8}$ " particle board is also considered less than good practice.
- Residential type windows and hardware were installed.
- A cheap quality floor carpet has been installed and is already showing serious deterioration.
- Room names and numbers are only painted on the doors and will need to be redone when the doors need repainting.



The maintenance of the facility, due to the quality of material used, the type of material chosen, and the design features, is expected to be higher than normal when considering the following:

- The window types and hardware are as normally used in residential construction, and are not felt to be adequate for a school. The sash which opens out near grade will block with snow in winter and be vulnerable to breakage.
- The stucco near grade and on parapet walls is subject to rapid deterioration. The stucco finishing details are considered not to have been properly worked out. Terminations at foundations, parapet walls (over metal flashing) look bad now and will deteriorate in the future.
- Excess cubage (volume) in high ceiling areas will be a permanent extra cost factor in heating the building.
- The fluorescent lamps in high ceiling areas will be very difficult to replace, and painting of the ceilings will require special scaffolding.
- The "floor decks" over low ceiling areas will collect dust and debris, and will be difficult to get at for cleaning. There will be a temptation to use them for storage which will be unsightly. This may also be a hazard if they are overloaded as they are not designed to take heavy loads.
- Although most floor areas were changed from vinyl-asbestos tile to carpet (at an extra cost of \$7,000 - C.O.7), it is not considered to be of particularly good quality, and was already badly spotted in many places.

- The folding partitions at the Kindergarten were noted to be very difficult to operate.
- The uninsulated crawl space will result in higher heating costs due to general heat loss plus heat loss from uninsulated ducts as well as causing a cold floor above.
- Janitorial maintenance will pose problems in manpower planning. With normal school housekeeping, classrooms are cleaned before or after the school day and washrooms and corridors are cleaned while classes are in session. At Kehewin, many of the washrooms are accessible only through classrooms and these would have to be cleaned when the students are not using the classrooms. The Library, Work Area and Reading Pit are open areas sharing corridor space, so the corridors should not be cleaned while these areas are being used.

The design drawings lacked necessary detail as did the contract specifications. This deficiency has, in general, a tendency to adversely affect the cost and quality of a building. For example:

- Supports for the chimney were not detailed necessitating the moving of the heating chimney much closer to the wall than its location on the drawings indicated.
- The height of partitions around classrooms is difficult to determine from the drawings.
- No insulation batts are shown on the drawings; they are only specified. Rigid insulation is shown under the shingles on sloped roofs, but is not specified, nor is the thickness indicated. It is not clear how the shingles are applied; nailing is specified, but it is not good practice to nail through  $1\frac{1}{2}$ " (the assumed thickness) of insulation and the  $1\frac{1}{8}$ " nails specified are not long enough anyway. No vapor

barrier is called for under this insulation in accordance with normal good practice.

- The drawings show "Styrofoam" insulation (type not specified) on the interior of the foundation walls in the crawl space, plus mineral wool batts in the space between joists above the foundation walls. Neither was provided. Current practice is not to use exposed cellular plastic insulation due to its fire hazard and this may be why it was not installed; however, neither was any substitute provided and, therefore, the crawl space and floor will be cold and allow excessive heat loss.
- The plans show a requirement for a fireplace complete with hearth, hood and chimney but details were lacking and this work was not constructed. Its base was constructed, however, leaving a hollow central shaft which is a hazard to children.
- Neither Door nor Finish Schedules give any indication of door finishes while the specifications refer to the Door Schedule for face veneers.
- Where standards are referred to in the specifications, often no year of issue is given or is "latest edition" indicated.
- It is not clear who pays for testing (e.g., concrete) - the Owner or the Contractor. There is apparent conflict between Articles 1A-2.1 and 6.2, 3A-5.1.
- The finishing designations in the specification, Section 9B-8.0, do not correspond to those used in the Finish Schedule. Finish F7, shown as "not used" in the Finish Schedule is widely indicated on the drawings, particularly on the sections. This causes confusion in both tendering and construction.

Generally, chalkboards and tackboards are inadequate as compared to that usually provided in schools. Classrooms in the Kehewin School have only approximately 56 square feet of chalkboard and 32 square feet of tackboard. The shortage of tackboard was evidenced by the amount of display material tacked on the gyproc wall.

The floor construction is the same for all areas of the building although the N.B.C. requires that the floor in the assembly, corridor and exit areas be designed for a 100 p.s.f. live load as compared to a 50 p.s.f. live load for classrooms. The plans show that the loads considered in the floor design do not meet this requirement.

Guidance Room 113 has no door although it is presumably intended for private discussion. The Reading Pit seating tiers are equal in width and the lower tier is too narrow for people to sit while accommodating the feet of those sitting above.

Low "pot-lights" outside the entrance doors are a hazard to tall persons.

Except as particularly noted, the building meets the minimum requirements of the National Building Code.

#### 4A. Fire Safety (General Description)

The following fire safety equipment was provided in the building:

##### Fire Alarm System

Completely electrically operated, non-supervised, non-coded combination automatic/manual system. The main components are:

- (a) Fire alarm stations (Edwards of Canada No. 270-SPO).
- (b) Automatic thermal detectors (Edwards of Canada No. 281, in all areas except Mechanical Room).
- (c) Automatic thermal detectors (Edwards of Canada No. 282 in Mechanical Room).
- (d) Fire alarm bells (Edwards of Canada No. 326 D-10").
- (e) End of line resistors.

Hand Extinguishers (Types approved by C.U.A. and Dominion Fire Commissioner)

1 CO<sub>2</sub> extinguisher.

2 pump tank type extinguishers, 2½ gallon capacity.

4B. Fire Safety (Technical Analysis)

The school is not protected by sprinklers; there is no standpipe system (fire hose cabinets), and there are no fire hydrants on the property.

The only fire extinguishing equipment is five 2½ gallon water tank type fire extinguishers plus a small CO<sub>2</sub> extinguisher in the Mechanical Room.

The school is, however, equipped with a fire alarm system including detectors and alarm bells which is considered adequate for its purpose.

Fire exit signs are also provided.

The design was reviewed by the Regional Office of the Dominion Fire Commissioner after the award of the contract. Most of the requirements outlined by the D.F.C. were subsequently carried out under Change Order No. 12, except for the requirements of a hose and standpipe system which was not provided. The minimum water supply specified by the D.F.C. is 70 g.p.m. for 30 minutes or 2,100 imperial gallons. The total water

storage capacity of the building is only 1,500 gallons when the tanks are full. This situation leaves the school with little or no real ability to suppress or extinguish a fire.

The National Building Code requires that floor assemblies immediately above crawl spaces have a  $\frac{3}{4}$  hour fire resistant rating except if the crawl spaces are subdivided into areas not exceeding 8,000 sq. ft. by fire walls.

This requirement has not been respected in the construction of the Kehewin school as one area is over 9,200 sq. ft. and the plans do not require the fire wall to continue between the floor joists above the beam. Further, the floor rating for the construction provided is in the order of 10 minutes.

#### 5A. Electrical (General description)

##### Building Distribution

A splitter trough picks up power from a meter box through #2/0 aluminum conductors. There are 5-200A CEB fused disconnect switches coming off the splitter feeding 42 - Circuit breaker panels rated 200 Amp. 3-phase 4 wire 120/208 with NQB breakers. This is considered an economic and satisfactory arrangement.

##### Lighting

Fluorescent fixtures for general lighting in most of the building -  
Electrolier K-302-248.

For Classrooms, etc. - Electrolier strip-lighting (without diffusers).

Fluorescent lamps - 40W T12 rapid start, cool white 3200 lamp lumens; initial life rating 15,500 hours.

Incandescent fixtures - general lighting in smaller low ceiling rooms -  
"Norsol".

Intercom

Integrated with sound system.

Sound System

Main amplifier on pedestal-mounted unit in office area, which is part of the sound console and includes microphone jack, radio control, etc. There is also a cabinet with a power supply amplifier for intercom amplification to all speakers in the school. Loud-speakers throughout the system are 8" diameter, mainly flush mounted in ceiling. Some are bi-directional corridor speakers, others are horn type speakers. Some speakers have return-call outlet boxes and switches.

T.V. System

Conduit only, for future system.

Clock and Program System

Complete programmed signal system with four-circuit programmer in General Office area, equipped with four circuits of automatic scheduling for any desired one minute interval in 24 hours.

Circuits Cover

- (a) Clock-controlled exterior signal horns.
- (b) Clock-controlled interior signal horns.
- (c) Push-button control of the interior signals for "Door Signal System".
- (d) Spare for future.

Exterior Lighting Control

Photo-electric with toggle switch override.



5B. Electrical (Technical Analysis) ,

The electrical system meets the minimum requirements of the Canadian Electrical Code.

Commonly accepted standards of good practice require the provision of 70 foot-candles of artificial light in classrooms and reading areas and 50 foot-candles as general area lighting. The Kehewin classrooms are provided with approximately 50 foot candles of artificial light and only 20 - 30 foot-candles in the reading pit area. Natural lighting during daylight hours will help to compensate for this shortage of artificial light in the same areas which is considered insufficient without daylight.

High-bay areas of the school have been provided with unshaded fluorescent fixtures mounted at extreme heights and at the 3:12 angle of the ceiling. They are inefficient and provide poor quality lighting at that height and angle; there is a potential hazard of falling tubes if not always properly fitted in their sockets and, in any case, difficult to maintain and replace. These fixtures are probably a minimum cost choice. A better choice of fixtures to provide adequate light, to avoid hazard from falling tubes and to allow reasonable ease of maintenance, would be high-bay mercury vapour fixtures with lenses.

6A. Mechanical (General Description)

Heating/Ventilation

The main heating system is a conventional forced warm air, zone controlled system to provide individual classroom comfort conditions. One secondary heating system, with separate furnace, provides heat to the entrances and the locker room while another heats the lounge, Janitor storage and an



area near the boys' and girls' washrooms. A fourth heating unit maintains proper temperature conditions in the mechanical room. All heating units are propane gas fired and appear to have sufficient capacity for the purpose intended.

Six of the eight washrooms have their own exhaust fans which discharge into small enclosed and, according to the drawings, unvented roof space rather than to the outside. The medical-dental suite has no independent exhaust system and all air from this area is returned through the school system.

#### Plumbing

Each classroom has its own small toilet room with one lavatory and one water closet. Separate facilities are not provided for boys and girls. There is also a washroom in the medical suite as well as one men's and one women's washroom in the central area. Water closets intended for use by small children are of the standard adult height of 14" or 15" rather than the lower height normally provided. No floor drains are provided in these rooms.

Pressurized water is distributed through the building from storage tanks totalling 1,500 gallon capacity and providing about a two-day water supply under average consumption conditions.

#### 6B. Mechanical (Technical Evaluation)

The plumbing design conforms to the Canadian and Alberta Plumbing Code.

The heating system conforms to the Canadian Gas Association requirements for gas fired equipment.

The lack of floor drains in the small toilet rooms causes maintenance and operational problems. Blocked toilets in this school have been experienced with the overflow causing a real mess on the floor and nearby carpeted area.

The large number of washroom and plumbing fixtures diversely located throughout the building makes for a very extensive piping system resulting in a disproportionate total plumbing installation cost.

Washroom ventilation does not discharge exhaust air directly to outdoors, which is contrary to the Canadian, Heating and Air Conditioning Code.

During construction a partition was provided to enclose the Lounge, Room 142, which had previously been an open alcove. However, no change was made to the ventilation system to compensate for this. This space therefore is inadequately ventilated.

KEHEWIN SCHOOL, ALBERTA

FUNCTIONAL ANALYSIS

INTRODUCTION

In evaluating the Kehewin School special consideration was given to determining to what extent the school facilities conformed to the statement of educational philosophy as expressed in the Kehewin Village "Project Analysis" (Design Brief prepared by the consultant).

The consultant, in designing the school, has attempted to provide an educational facility which would readily accommodate changes in teaching practices, and in which the teaching-learning process would be encouraged to take place not only in traditional teaching areas but in all areas of the school.

Each educational component was examined with a view to establishing the functional relationship of that facility to the whole school and determining if optimum use could be made of each facility.

LIBRARY (RESOURCES CENTRE).

In reviewing the design of the Library (Materials Centre), the following main factors were considered: (1) location, (2) future expansion, (3) space, and (4) environment.

1. Location

The Library should be located so that its learning atmosphere will not be disrupted by noises coming from playgrounds or other outside sources, or by inside noises caused by student movement from the Activity Room, etc. Some of the perimeter of the Library should be close to the main flow of pupils but should not be a "walk through" area. To encourage maximum community use, as defined in the Kehewin Development Concept, the Library should be located close to the main entrance.

The Library in the Kehewin School, being situated in the centre of the building, is well insulated from outside noises. However, because of the open area concept which characterizes this part of the building, the Library will be subjected to considerable inside noises from students moving in and out of their classrooms. The "Library" includes the circulation area which leads in and out of the Classrooms. With respect to the location of the Library close to the main entrance, this feature has been partially met.

It is to be noted that it is planned to use the hallways at the classrooms, and other areas of the school as extensions of the Library and for display of exhibits.

2. Future Expansion

The design and location of the Library will prevent future expansion, since it will be difficult to expand it without substantial changes in the school design as a whole.

3. Space

The Library was initially designed to accommodate grades 1-3 only. With the introduction of grades 4-5-6, it is felt to be much too small, and its peculiar design makes it very difficult to sub-divide into smaller areas.

4. Environment

As mentioned above, it will be difficult to eliminate loud noises although the level of noise will be decreased somewhat due to carpeted floors. The lighting in the Library proper, both daylight and artificial, is excellent. However, in the Reading Pit, which may be considered an extension of the Library, both daylight and artificial lighting are inadequate.

PRE-SCHOOL EDUCATION FACILITIES (KINDERGARTEN AND DAY CARE).

The location of the pre-school area has been given careful consideration. This area has been provided with separate entrances to permit easy, safe access and to facilitate use of the intended adjacent outdoor play area. These rooms are removed from the other instructional areas in the school.

The Day Care centre and the Kindergarten are separated by an operable wall. This offers many advantages. In addition the Kindergarten is separated from the Activities Room by another operable wall.

Each facility has a pupil capacity of 20-25 children and an area of approximately 1000 sq. ft., excluding cloakroom and washroom facilities. The shape of the rooms makes visual contact with all children possible at all times and provides for flexibility in arrangement of interest and play centres.

Expansion of facilities, if required at a later date, will be very difficult and costly.

The whole area is covered with wall-to-wall carpeting, which should contribute to sound control and at the same time provide comfortable working and sitting. Separate toilet rooms have been provided. However, it was noted that the toilets and basins are not of suitable height for pre-school students.

Insufficient chalkboards and tackboards have been provided.

No comments can be made at this time on the furniture, equipment, materials, various interest centres, etc., as these had not yet been received.

Generally speaking the Day Care Centre and the Kindergarten reflect good planning and have good spatial relationships with the remaining school facilities.

### CLASSROOMS

The classrooms, although irregular in configuration, are designed to be used as a conventional learning space. It is intended that as the school's operational philosophy changes from the traditional to the "free school" concept, the functions of the classrooms can be easily adapted to meet the new roles. However, this flexibility does not seem to exist in the present design. Non-movable walls separate the classrooms from each other and from the Library Resource area.

The classrooms are removed from the main entrance, Washrooms, and Activities Room.

Each classroom is provided with a semi-circular reading area (carpeted) which is located adjacent to a single washroom. This reading area having no windows, provides no visual link with the outside, creating a closed in feeling. There are insufficient blackboards (14 ft.) and tackboards (8 ft.). There is ample wall space where additional chalkboard and tackboard could have been installed.

A narrow hallway, which is an extension of the Library, separates the classroom area from the Library. All student traffic in and out of the classroom must pass through this area. This will adversely affect the activities in the Library area.

### ACTIVITIES ROOM

The purpose of this room is to provide a space for several instructional and non-instructional activities, including educational and play exercises, music, dancing, lunch room, a meeting room for the community, etc.

It is located adjacent to the pre-school area and is separated from it by an operable wall. When this is opened it will provide excellent facilities for individual and group play for the children in the Day Care Centre and Kindergarten Room.

Considerable noise will be generated in the Activities Room. For that reason, it has been located away from the Library and Classroom areas. However, because of the open design the Activities Room is not sufficiently isolated from these areas and noises emanating from the Activities Room will be a distracting factor for those using the Library/Resources centre.

The Activities Room is to serve a school population of less than 100 students. Its size, approximately 1600 sq. ft., will adequately meet all the needs of the school and community.

### COUNSELLING UNIT

Two counselling (Guidance) rooms have been provided. These areas are to provide space where the teacher, a student, and his parent may meet to discuss specific problems relating to the student's education program. It is also intended that this area will be used to administer special tests such as aptitude and I.Q. tests.

The counselling rooms are located in high noise areas-- one near the washrooms and main entrance and the other (without a door) near the Activities Room. The privacy and freedom from distraction required while conducting tests will be absent.

Considerable use can be made of these rooms for individual or small group work.

### MULTI-USE OF AREAS

The many protuberances (in most rooms) do not assist in achieving the most flexible and effective use of these rooms.

The Classroom area can be locked, including the Resource Centre and the Workroom, permitting separate use of the rest of the building.

The Clinic area can be used separately from the school portion of the building through a separate entrance. In the future, if the Reserve obtains another clinic, this area could be used for other functions by the Band or the school. This area (980 sq. ft.) is well located in the building.

The Activities Room, Kindergarten and the Day Care Centre can be used separately via their own entrances. Also, having operable partitions between them, they can be used either separately or together, for a variety of activities. However their shape is not designed to permit effective use as one combined area (3418 sq. ft.). The Kitchen is not well located in relation to their intended use as lunch-room.

### FLEXIBILITY RE FUTURE ADDITIONS

The Project Analysis mentions the desired flexibility of the school for future additions. However, in view of the building's shape, the only way to add new parts will be to build separate elements near it and connect them by covered walkways, or by adding other "bubble" protuberances around the school. Either of these will be difficult and costly to do.

### CHANGES IN TEACHING PRACTICE

According to the consultant, it is intended that it be relatively easy to accommodate changes in teaching. However, such changes would necessitate a major redesign of the school. The Kindergarten and Day Care could be used as classrooms but other areas are very limited as to their suitability for this purpose.



CONCLUSION

Although the consultant intended to design a school in which an "open school concept" would prevail and which would provide the proper environment for changes in teaching practices, he only partially fulfilled these objectives. The classrooms, having fixed partitions do not lend themselves to either large or small group instruction. They are to be used as regular academic classrooms. The Library has some very interesting features but its very location will severely affect its usefulness. One of the innovative design features is the circular area (Reading Pit) surrounding the intended open fireplace. While it has great possibilities with respect to storytelling, small group discussion, etc., for lack of adequate lighting, it cannot be used as a reading area. The Activities Room, with the adjacent pre-school facilities, offers the greatest possibility for innovation in teaching strategies. It is felt that generally the design will tend to impose a traditional school system.

CONTRACT ADMINISTRATION

Kehewin School Project

Alberta



CONTRACT ADMINISTRATION

In 1973, the Band Council expressed their wish to have their new school designed and constructed through their own arrangement and requested that the necessary funds be turned over to them for that purpose. Subsequently, Treasury Board approved of the transfer of funds, an agreement was reached between the Board and the Department (see Appendix "A"), the Band hired a consulting architect and entered into a construction contract. Subject to the agreement then, the design and construction of the facility was carried out under contract between the Band and their consultant and the Band and the construction contractor.

No tenders were called for the project. Instead a price was negotiated with a selected contractor who had done similar work for the architect. Despite this, \$73,000 of extra cost was incurred during construction (12.7% of contract). The contract was signed August 16/74, however prior to this construction started (early July) and the contractor's first claim for payment was dated July 31, for \$142,000 (24% of contract amount).

The original target date for completing the building was January 1, 1975, but it was not completed until the summer of that year. Considering the complexity of the design and the condition of the plans and specifications, the contractor did a reasonably good job and fulfilled his obligations under the contract. The Band indicated satisfaction regarding the use of Indian labor on this project and the fact that 1 or 2 workers got permanent jobs as a result.

The fireplace hood and chimney (with fan) were not provided, though shown on the drawings. We understand that the Kehewin Reserve metal shop requested

\$12,000 to fabricate the hood. The contractor stated in his bid of June 3, 1974: "Details for the fireplace, hood and chimney are lacking. We have, therefore not included the hood and chimney....". Although it is evidently intended to provide this installation in the future, no provision appears to have been made for an opening through the exterior wall, nor for a hearth. It will therefore be more difficult and more costly to provide this in the future. The concrete base merely has a deep hollow central shaft, a potential hazard, particularly for small children who could fall in.

Both folding partitions delivered were too long for the openings provided (shop drawing error?) and do not provide the full chalkboard and tackboard surfaces as called for. Support for these had to be provided as an extra (\$1,800 - C.O. 13) to the contract.

The following shows the original quotation of \$572,833 based on the working drawings and, the additions and deletions, resulting in a revised contract amount of \$658,106.

ITEM	1st Bid 18/4/74	Added - Bid 3/6/74	Deleted - Bid 16/8/74	Added - Bid 16/8/74	Deleted - by C.O.	Added - by C.O.
Chalkboards	500 sq.ft.		) As shown and ) specified )-\$2000			) #6 - \$3430 ) )
Tackboards	500 sq.ft.					
Washroom Floors	Sheet vinyl	Ceramic Tile \$1364				
Washroom Accessories	Included	(\$700 listed in contract breakdown)				#9 - 405
Door Signs	Included					#14 - 300
Crawl-space insulation	?	shown on drugs.			N11	
Stage (Rm. 131)	?	" " "			N11	
Fireplace						
- hood	?	) "N.I.C." )			N11	
- chimney		?				
- fan						
Extra reinforcing		\$550				
Special Concrete		\$719				
Patio door		\$490	- \$490			#1 - 490
Vinyl wall covering		\$9,710	-\$9710			
Struct'l Steel (if required)		(\$2937)				
PCS's Included:						
Electrical		(\$42,639)				
Dry-wall		(\$26,850)				#10 - 35,150
Roofing & flashing		(\$22,000)		+\$4,500		
Vanities, counters, etc.			-\$12,000			#2 - 12,000
Carpet			-\$ 5,060			#7 - 7,060
Drainage Field				+\$21,850		
"Mechanical Items"				+\$15,000		
Partition Rms. 109-110					#3 - \$134	
" changes Rms. 138-141						#4 - 550
" Rm. 142						#5 - 837
Millwork Rms. 108,142						#8 - 3875
Stub Wall @ Reading Pic						#11 - 1074
Support for Operable Partitions						#13 - 1800
D.F.C. requirements						#12 - 6326
		+12,833		+\$41,350	\$134	+ \$73,257
		\$560,000	-\$29,200	\$572,833		\$ - 134
\$560,000 based on preliminary drawings		\$572,833 based on working drawings		\$614,163 - 29,200 \$584,963		\$638,106

**NOTES** - The contractor submitted his first "tender" of \$560,000, dated April 18/74, based on "preliminary drawings & instructions" by the architect.

- On June 3/74, based on presumably complete drawings, schedule & details (working drawings are dated May 5/74) he made various revisions to the first tender & indicated "allowances" included for several major trades. This revised tender was \$572,833.

- For final tender, dated Aug. 18/74, presumably based on further data and/or new or firmer prices for subcontractors, he indicated a need to increase the June 3 figure by \$41,350. In order to partially offset this and keep the "contract" within the figure of \$585,000 the architect deleted 5 items for a total amount of \$29,200. However, 4 of these were reintroduced by change orders at a cost of \$22,980. (C.O.'s 1 & 2 on Sept. 26, C.O.6, Nov. 13 & C.O.7 Jan 10/75). Thus this was no more than a bookkeeping exercise to have the "contract" within the terms of the agreement. This is further evidenced by the fact that C.O.2 was for counters, shelves, etc., & C.O.6 was for chalkboards & tackboards which are essential to a school's functioning. C.O.'s 6 & 7 in fact included increased requirements and costs above what was deleted. Also there is no indication that the deletion of carpets (C.O.7) was offset by another type of flooring. The PCS for drywall was known on August 16th to be much too low and was in fact more than doubled later (C.O.10).

<u>Change Orders</u>	<u>Amount</u>
C.O.1 - <u>September 26, 1974 - Restore Patio door, Activities Room 131</u>	\$490
This amount is the same as the credit given when this item was deleted during contract negotiations.	
C.O.2 - <u>September 26, 1974 - Restore Vanities, Counters, Cupboards and Wood Shelving</u>	\$12,000
This amount is the same as the credit given when this item was deleted during contract negotiations.	
There are approximately 200 LF of counters and vanities, at about \$60/LF ( no "shelving " is shown).	
C.O.3 - <u>October 21, 1974 - Delete Partition at Dark Room 109-110</u>	(\$134 credit)
This involves deletion of 18'-6" of partition for \$134 credit, at about \$7.25/LF	
C.O.4 - <u>October 21, 1974 - Modify Partition Layout in Office, Room 138-141</u>	\$550
At this time the carpentry work was about 3/4 done, no drywall was done yet, and no millwork delivered (Progress Claim 7/10/74). The change in partition layout involved a net reduction of 6' in partitions, but addition of one 7' and two 2' view panels (wood). The net extra of \$550 seems high.	
C.O.5 - <u>October 21, 1974 - Add Partition and Door at Teachers' Lounge 142</u>	\$837
This involves the addition of 28' of curved partition for \$387, at about \$30/LF (includes 1 new door). This seems high compared to the credit of \$7.25/LF in C.O.3.	
C.O.6 - <u>November 13, 1974 - Chalkboards and Tackboards</u>	\$3,430
A \$2,000 credit was allowed for the deletion of all chalkboards and tackboards during contract negotiations. 500 sq. ft. of each had been allowed for by the contractor. The C.O. calls for 960 sq.ft. of tackboard and 208 sq.ft. of chalkboard. The extra cost appears to be more than necessary to cover the difference, unless this was due to 610 sq.ft. of the tackboard called for on curved walls, mainly in the corridor. However no such tackboard was installed at the time of our visit. Also, the tackboards did not appear to be cork as specified but rather fibre-board covered with jute.	

<u>Change Orders</u>	<u>Amount</u>
C.O.1 - <u>September 26, 1974 - Restore Patio door, Activities Room 131</u>  This amount is the same as the credit given when this item was deleted during contract negotiations.	\$490
C.O.2 - <u>September 26, 1974 - Restore Vanities, Counters, Cupboards and Wood Shelving</u>  This amount is the same as the credit given when this item was deleted during contract negotiations.  There are approximately 200 LF of counters and vanities, at about \$60/LF ( no "shelving " is shown).	\$12,000
C.O.3 - <u>October 21, 1974 - Delete Partition at Dark Room 109-110</u>  This involves deletion of 18'-6" of partition for \$134 credit, at about \$7.25/LF	(\$134 credit)
C.O.4 - <u>October 21, 1974 - Modify Partition Layout in Office, Room 138-141</u>  At this time the carpentry work was about 3/4 done, no drywall was done yet, and no millwork delivered (Progress Claim 7/10/74). The change in partition layout involved a net reduction of 6' in partitions, but addition of one 7' and two 2' view panels (wood). The net extra of \$550 seems high.	\$550
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C.O.6 - <u>November 13, 1974 - Chalkboards and Tackboards</u>  A \$2,000 credit was allowed for the deletion of all chalkboards and tackboards during contract negotiations. 500 sq. ft. of each had been allowed for by the contractor. The C.O. calls for 960 sq.ft. of tackboard and 208 sq.ft. of chalkboard. The extra cost appears to be more than necessary to cover the difference, unless this was due to 610 sq.ft. of the tackboard called for on curved walls, mainly in the corridor. However no such tackboard was installed at the time of our visit. Also, the tackboards did not appear to be cork as specified but rather fibre-board covered with jute.	\$3,430



C.O.7 - January 10, 1975 - Supply and Install Carpets

\$7,060

The carpets originally were deleted during contract negotiations. This was \$5660 for 2660 sq.ft. at about \$1.90/sq. ft. Much more carpet was later installed, 11,310 sq. ft. for \$7,060.

However 8650 sq. ft. of vinyl asbestos tile originally called for was deleted and replaced by the carpet (11,310 - 2,660 sq. ft.). Based on Ottawa figures this is worth about \$0.80/sq. ft. x 8,650, or about \$6,900.00

Thus the actual cost of the new carpet was  $6,900 + 7,060 = \$13,960$   
 $\$13,960 \div 11,310 = \$1.23/\text{sq. ft.}$  It would, therefore, appear that a cheaper carpet than originally called for was provided, but the details on this are not available.

C.O.8 - January 17, 1975 - Millwork (counters) in Workroom 108 and Lounge 142

\$3,875

About 40' of curved counter was provided, at about \$97/LF compared to \$60/LF in C.O.2. The higher cost may be partially justified by the fact that these are curved.

C.O.9 - January 17, 1975 - Washroom Accessories

\$405

The Architect's letter of November 22, 1974 states that the actual cost for these was \$905 as opposed to a "budget" of \$500 "based on assumptions rather than a schedule... which was not available at the time of his quote". They, therefore, approved this extra for the difference of \$405.

However, the Progress Claims for payment, which include the Contractor's breakdown of trades, show \$700 was carried by the Contractor. The extra charge should thus have been only \$205.

C.O.10- February 28, 1975 - Additional Cost of Drywall, "Interior Stucco" and Spraytex Finishes

\$35,150

The Contractor's bid of June 3, 1974 included a Prime Cost Sum of \$26,850 for "drywall". In his final contract bid of August 16, 1974, he states: "In that the tenders for this work... were drastically in excess of this amount, it was mutually agreed that our firm should attempt to carry out this sub-contract with our own forces... Once... complete and our cost over and above the allowance of \$26,850 was known, we would be reimbursed for this extra cost by the Owners".

C.O.10 - Cont'd.

The "actual" cost evidently came to \$62,000 and this Change Order was issued to cover the difference of \$35,150, an amount substantially more than the original figure itself.

Several points emerge from this item:

- a - this work was treated on a "cost-plus" basis.
- b - the work was, in fact, carried out by sub-contractors, not by the Contractor's own forces. He and the consultant should have known this work was too difficult for that.
- c - The consultant seems confused by this item. His letter of November 18, 1974 quotes subtrade prices at about \$70,000. His letter of February 28, 1975 states that this price was \$66,670. Taking the latter figure it appears that \$4,670 was "saved."
- d - it was obvious during negotiations that the cost would be much higher than allowed for, thus again the "contract" figure used for this work was "fictitious".
- e - the "interior stucco" (\$5,600, not including lath) and Spraytex (\$6,000) were not mentioned in the contract. The former was evidently a change from drywall which was presumably found to be impossible to apply in the small circular rooms. The latter, however, was called for in the Finish Schedule, and should have been covered somewhere by the Contractor.

C.O.11 - February 27, 1975 - Stub Wall Around Reading Pit 107

\$1,034

This cost seems reasonable and this wall eliminated the potential hazard of sunken seats in an open circulation area.

C.O.12 - March 6, 1975 - Additional Work to Meet Requirements of Dominion Fire Commissioner

\$6,326

This work was added at the request of the DFC (letter of September 3, 1974) following his review of the drawings. This should have been taken into account before finalizing the contract. It cannot be judged now if this would have saved money, or how much.

C.O.13 - March 6, 1975 - Structural Support for Operable Partitions \$1,300  
(between Rooms 124-129 and 129-131)

This support should have been provided as part of the contract. Failure to do so by the consultant is an indication of an oversight or poor coordination in his work.

C.O.14 - March 6, 1975 - Signage \$ 300

The Consultant's letter of April 7, 1975 states that the signage provided was more expensive than "budgetted for by the General Contractor". No reference to this can be found in the specification. The signage provided consisted of room numbers and names painted on the doors. This may be a case of "oversight" by the consultant.

Other Changes

1. The drawings call for "Styrofoam" insulation on the interior of the foundation walls, in the crawl-space, plus mineral wool batts in the height of the floor joists above. Neither were provided. Our estimate is that this material is worth about \$1,000, but no credit was received.
2. A "Stage" (platform) is shown on the drawings in Activities Room 131, semi-circular in shape, about 13' x 26', but was not provided. A "Notice of Change" A-3 was issued October 9, 1974 to cover this, but no credit was received (final claim for payment has been received).



COST ANALYSIS

Kehewin School Project

Alberta

COST ANALYSIS

Cost of Community Planning and School Facility

1) Community Planning consulting fees	\$ 30,000
2) School and Village Survey consulting fees (school project brief)	13,500
3) Building Construction Contract	658,106
4) Building consulting fees (estimated)	54,930
5) Landscaping Estimate (including consulting fees)	57,900
6) Electrical power supply	20,600
	<hr/>
	\$835,036
	<hr/> <hr/>

Note: The above cost does not include school furnishings. The exact amount paid to the Consultant by the Band is not known.

Cost to Department

1) Contribution to Band for Community Planning Fees (D.J. Cardinal)	\$ 30,000
2) Contribution to Band for consultants study "School and Village Survey" (Project brief)	13,500
3) Contribution to Band as per agreement (Appendix "A") for design and construction of the building (including \$35,000 design fee to D.J. Cardinal)	625,000
4) Contract with Alberta Power to construct a 3 phase power supply line required by the school	20,600
	<hr/>
	\$689,100
	<hr/> <hr/>

Note: The cost of items (1) and (4) above, Community Planning and electrical power, were incurred in direct relation to the planning and construction of the new education facility; however, both items benefit the community at large.

Cost to Band

The cost to the Band includes the above cost for the community planning and school facility plus the cost of school furnishings estimated to be in the order of \$58,000, less the amount paid by the Department. The exact net cost to the Band is not known, but is believed to be in the order of \$203,800, not including a consulting fee for furnishings.

Cost of Consultant (D.J. Cardinal)

Included in the above cost figures, the Department contributed \$78,500 to the Band for consultant's fees.

The fees paid to Mr. D.J. Cardinal are not exactly known but, according to the consultant's contract, could be as high as \$108,130 as follows:

1) Fee for community planning and the School and Village Survey		\$ 43,500
2) Estimated fees for executing project (total contract \$658,100)		
- Architectural - 7% of \$350,200.		24,570
- Engineering:		
- Structural	- \$154,000	
- Electrical	- 47,500	
- Mechanical	- 84,500	
- Disposal Field, etc.	- 21,000	
	<u>\$307,900 @ 7%</u>	21,550
- Co-ordinating fee - 25% of Engineering Fees		5,380
- Travel and printing		3,500

- Landscaping + 7% of \$54,000 (estimated)	\$ 3,900
- Furnishings & equipment 10% of \$58,000 (estimated)	<u>5,800</u>
Total execution fees	\$ 64,630
	<u>+ 43,500</u>
Total Planning & Execution Fees	<u><u>\$108,130</u></u>

Although the portion of the fees which are based on 7% are reasonably in accordance with the schedule of minimum fees recommended by the Architectural Association of Alberta, the total fee is higher than usually incurred in the development of similar type projects.

The fee of \$13,500 for the "School and Village Survey" apparently covers the cost of the Project Analysis. Under usual circumstances this pre-design work is part of the normal architectural services covered by the normal percentage plus expenses fee and not requiring additional payment.

#### Unit Cost Analysis

Based on net areas, the proportion of space related to pupil education as compared to community use space is 68%. The 1976 enrolment projection is 95 pupils. The gross area of the building is 15,455 sq. ft. The building only cost, not including the new power supply, school furnishings and landscaping, but including consulting fees was \$726,430 based on available figures. Unit costs are then:

- a) Gross area cost of building =  $\frac{726,430}{15,455} =$  \$47/sq. ft.
- b) Cost of pupil education area =  $68\% \times 726,430 =$  \$493,970
- c) Cost per pupil of education area =  $\frac{493,970}{95} =$  \$5,200/pupil
- d) Cost of total building per pupil =  $\frac{726,430}{95} =$  \$7,646/pupil

- e) Square foot area per pupil =  $\frac{0.68 \times 15455}{95}$  = 111 sq. ft./pupil  
(education area)
- f) Square foot area per pupil (total area) =  $\frac{15455}{95}$  = 163 sq. ft./pupil

#### Comparison of Costs

The Kehewin project costs have been compared with unit costs of three other schools constructed at Onion Lake, Saddle Lake and Cold Lake at about the same time. The other schools are larger, accommodating a greater number of pupils.

The other schools are constructed of superior quality materials, hardware and fixtures yet at a closely comparable square foot construction cost.

The mechanical component of the Kehewin project costs 12% of the total building cost while the other schools range from 18 to 20%. The electrical component is 7% as compared to 9% in the other schools. The architectural and structural component is in the order of 79% of the total Kehewin cost as compared to an average of 72% for the other schools.

As economy quality materials have been used at Kehewin as compared to Onion Lake, Saddle Lake and Cold Lake, and as unit square foot costs are approximately equal, it is reasonable to conclude that the unusual architectural form and shape of the Kehewin building was a significant contributor to the capital investment cost.

The other schools provided gross areas of 93, 112, and 127 sq. ft./pupil as compared to the Kehewin total area of 163 sq. ft./pupil or education area of 111 sq. ft./pupil.

SUMMARY OF OBSERVATIONS AND CONCLUSIONS

Kehewin School Project

Alberta

OBSERVATIONS AND CONCLUSIONS

1. The original design prepared by Departmental staff in 1971/72 to accommodate the projected enrolment of 95 pupils had a gross area of 8,965 square feet as compared to the redesigned and constructed building which has a gross area of 15,455 square feet to accommodate the same number of pupils. Approximately 68% of the as-built construction is to accommodate pupil education with the remainder intended for community use.
2. The Department contributed \$13,500 to the Band towards the consultant's fee (Mr. D.J. Cardinal) for a "School and Village Survey" which included a project analysis (design brief) at the pre-design or conceptual stage. The final design, however, deviated considerably from the stated project analysis (design brief). In short, the building produced is a substantial deviation from the building promised by the project analysis, prepared by the consultant.
3. The efficient arrangement of space for schools usually provides a net area to gross area ratio of at least 65%. The actual ratio for the Kehewin project is 59.3%, indicating a space wastage in the layout of the building.
4. The gross area per pupil of 163 sq. ft. is considerably higher than average for a pupil education facility. This building was designed as a community facility and for adult use and therefore the comparison of this feature with other schools is not really valid. The educational area compares favourably with other school buildings constructed by the Department.

5. The extensive use of curves and circles in the building shape and form may be interesting architecture, but it causes difficulties and unnecessary high cost in design, construction and maintenance. The shape of the building is expensive while the building materials, fixtures and hardware are utility in quality. The Kehewin design sacrificed material quality for architectural shape and form. It is expected that the Kehewin school building will have a high life-cycle cost.
6. Excess cubage (volume) in high ceiling areas will be a permanent extra cost factor in heating the building as will the uninsulated crawl space.
7. The design drawings lacked necessary detail, as did the contract specifications which in general, reflects in the quality and cost of a building.
8. The provision for fire protection in this building is minimal. The design was reviewed by the office of the Dominion Fire Commissioner whose requirements were met except for the provision of a hose and standpipe system. The only fire extinguishing equipment provided are five 2½ gallon water tank-type fire extinguishers plus a small CO<sub>2</sub> extinguisher. This situation leaves the school with little or no real ability to suppress or extinguish fires. The school is, however, equipped with an adequate fire alarm system.  
  
The fire resistant rating of the floor assembly does not meet the requirement of the National Building Code and therefore constitutes a situation of fire hazard.



9. The electrical system meets the minimum requirements of the Canadian Electrical Code, but the quality of the lighting provided is less than commonly accepted standards of good practice, and the consultants' own recommendations.
10. Each classroom has its own toilet room which does not provide separate facilities for boys and girls and water closets intended for use by small children are of the standard adult height. There is, however, one men's and one women's washroom in the central area. The large number of washrooms and plumbing fixtures dispersed throughout the building, makes for an extensive and costly piping system.
11. The provision for ventilation is less than normally provided for schools.
12. Although the consultant intended to design a school in which an "open school concept" would prevail and which would provide the proper environment for changes in teaching practices, he only partially fulfilled these objectives. From a functional point of view, it is believed that generally the design will tend to impose a traditional school system. The design restricts economical opportunities for future additions. The design is not conducive to changes in teaching methods or the conversion of space for the purpose of function other than originally intended.
13. The construction contract was negotiated with one contractor rather than arranged by a competitive tendering process. There were a large number of change orders arranged after the contractor's original bid was accepted and construction commenced. Considering the complexity

of the design and the inadequacies of the plans and specifications however, the contractor did a reasonably good job and probably at a fair and proper price.

14. The total consulting fees for planning, design and construction are considered to be excessive as compared to those usually experienced for projects of a similar type.
15. The building cost per square foot is comparable to the cost of other school facilities constructed in the same area at about the same time. The total building cost per student, however, is substantially higher due to the extra space provided for community use.
16. It is understood that the Band indicated satisfaction regarding the use of Indian labour on the project and the fact that 1 or 2 workers found permanent jobs as a result.

It is also understood that the Indians consider that the methods used in developing the facility and the building itself, promotes a "good sense of value" in the community.

KEHEWIN SCHOOL, ALBERTA

TREASURY BOARD APPROVALS

AND

AGREEMENT

T.B. 722874

Ottawa, Ontario,  
K1A 0R5.  
November 27, 1973.

Mr. H.B. Robinson,  
Deputy Minister of Indian  
Affairs and Northern  
Development,  
Ottawa, Ontario.  
K1A 0H4

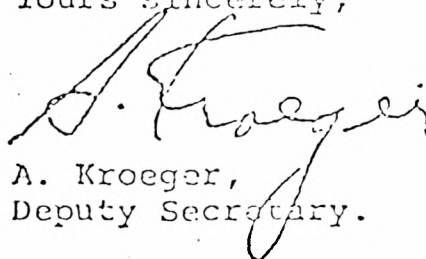
Dear Mr. Robinson:

Your Minister's submission requesting approval in principle for the construction of a school and staff residences at Kehewin, Alberta at a cost of \$375,000 was approved on November 15, 1973.

In reviewing this submission with your officials, it was understood that construction will be carried out by the Kehewin Band as a pilot project to identify the feasibility of delegating authority for construction projects to Band Councils. Accordingly, the Department is to enter into an agreement with the Kehewin Band to establish the necessary financial control and contracting procedures. Funds will be advanced to the Band for construction, with progress payments being made consistent with the planned cash flow.

The Treasury Board Secretariat would appreciate receiving the final set of guidelines for the project to be contained in an agreement with the Kehewin Band, as well as the evaluation of the pilot project, the conclusions of which are expected to have a bearing on future submissions of this type.

Yours sincerely,

  
A. Kroeger,  
Deputy Secretary.

OCT 2 1973

Date

SUBJECT: APPROVAL IN PRINCIPLE FOR EDUCATION CONSTRUCTION.

PROPOSAL: To approve in principle the construction of a school and staff residences at Kehewin, Alberta. The proposed facilities will include 4 classrooms, and 3 staff units.

COST: Estimated to be approximately \$375,000.

CHARGEABLE TO: Vote 10, Indian and Eskimo Affairs Program, Capital Expenditures (Education).

- REMARKS:
1. The Kehewin Band has asked that approval be given to transfer all funds to the Band who will completely carry out the project.
  2. On the basis of discussions held with the Band, and in accordance with our announced policy of more directly involving the Indians in their programs, it is felt that this project should be treated as a pilot project with the Band being totally responsible for all aspects of it.
  3. The Department is preparing guidelines for the Band to ensure that construction safety regulations, fire prevention standards, pollution control standards, etc. are followed, as well as to ensure that proper control is maintained over the expenditure of funds.
  4. It is recommended that Treasury Board give approval to the transfer of funds to the Kehewin Band for this project.

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SECOND TREASURY BOARD APPROVAL

2/779-625/74-75

T.B. 728482

June 17, 1974.

Mr. H.B. Robinson,  
Deputy Minister of  
Indian Affairs and  
Northern Development,  
Ottawa, Ontario.  
K1A 0H4

Dear Mr. Robinson:

Your Minister's submission requesting an amendment to the approval-in-principle provided in TB 722874 of November 15, 1973 to increase the amount from \$375,000 to \$460,000 for construction of a school and staff units at Kehewin, Alberta, was approved on June 13, 1974.

Yours sincerely,

*A.J. Darling*  
A.J. Darling,  
Director,  
Social and  
Manpower Division.

*Revised  
B.L.*

The Honorable the Treasury Board  
L'honorable Conseil du Trésor

T.B. Number - C.T. No

INDIAN AND NORTHERN AFFAIRS

779/6-1-001 (E.25)

Department - Ministère

File - Dossier

Date

MR. F.L. SIKORT 2-0865

SUBJECT: PROGRAM APPROVAL

PROPOSAL: To increase the amount of the approval in principle for construction of a 4 classroom school and 3 staff units at Kehewin, Alberta.

COST: \$460,000.

CHARGEABLE TO: Vote 10, Indian and Eskimo Affairs Program, Capital Expenditures (Education).

REMARKS:

1. By T.B. 722874 dated November 15, 1973, approval was granted for this project up to a total of \$375,000.
2. As a result of delays in completing consultation with the Band and the Architect, it has not been possible to proceed with the actual construction. In the time which has elapsed, and anticipating that construction will not get underway until later this year, we estimate that the costs of labour and materials will have increased to a point where the \$375,000 will be insufficient.
3. It is therefore recommended that the limit of costs for this school be raised to \$460,000. This figure is based upon a comparison of other cost increases we have encountered during the past few months.
4. Funds will be found from within our existing program by adjusting priorities.

*Original*

- 2 -

5. This school project will be part of a larger construction project being planned by the Kehewin Band, which includes a day care centre, community health clinic and a library.

Funding for the non-education portion will come from a number of sources, including Community Affairs Branch for the Day Care Centre, Band funds for the Health Clinic (which will be leased to the Department of National Health and Welfare), and an expected grant from the Work Opportunity Program. The total cost of the project will amount to some \$729,000.00.



AGREEMENT BETWEEN BAND AND DEPARTMENT

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

These ARTICLES OF AGREEMENT made in triplicate this twenty-fourth (24th) day of July, in the year Nineteen Hundred and Seventy-Four A.D.

Between

Her Majesty the Queen in Right of Canada as Represented by the Minister of Indian Affairs and Northern Development (referred to as "the Minister"),

and

The Chief and Council of the Kehewin Indian Reserve No. 123 (referred to as "the Council").

WITNESS THAT the Minister and the Council agree as follows:

ARTICLE I

The Council will, between the date of these Articles of Agreement and the thirty-first (31st) day of December, 1974, ensure that the following work be carried out in a careful and workmanlike manner and within the financial commitments:

1. Construct a school as designed by Douglas Cardinal, Architect, as detailed on the following drawings:

Architectural Drawings

Site Plan & Index of Drawings	Sheet 1 of 9
Floor Plan	Sheet 2 of 9
Roof Plan	Sheet 3 of 9
Reflected Ceiling Plan	Sheet 4 of 9
Elevations	Sheet 5 of 9
Sections 1 and 2	Sheet 6 of 9
Sections 3 and 4	Sheet 7 of 9
Sections 5 and 6	Sheet 8 of 9
Sections 7, 8, 9, 10, and 11	Sheet 9 of 9

Structural Drawings

Foundation & Main Floor Framing Plan & Sections	Sheet S-1
Roof & Mechanical Floor Framing Plan & Sections	Sheet S-2
Sections and Details	Sheet S-3

Mechanical Drawings

Site Plan, Roof Plan Details and Legend	Sheet M-1 of 4
Crawl Space Plan	Sheet M-2 of 4
Main Floor Plan	Sheet M-3 of 4
Mechanical Room and Details	Sheet M-4 of 4

Electrical Drawings

Site Plan and Details	Sheet E-1 of 3
Floor Plans - Lighting	Sheet E-2 of 3
Floor Plan and Details	Sheet E-3 of 3

and as specified in the specifications marked Kehewin Village Development, Phase I, Educational Facility.

Page 2

ARTICLE II

The Council will ensure that approvals are obtained of the plans and specifications from the Minister and all authorities having jurisdiction.

ARTICLE III

The Council shall provide a copy of the contract between the Band and the General Contractor to the Regional Director for approval.

ARTICLE IV

The Council shall maintain complete records, which will show the amounts paid on each contract and related administrative cost to the Band, which will be subject to audit by the Minister.

ARTICLE V

The Council will ensure that insurance is obtained in accordance with the Insurance Schedule attached as Appendix "A".

ARTICLE VI

For the execution of the work, the Minister will pay to the Council, as his financial commitment towards the total project, the sum of Six Hundred Twenty-Five Thousand Dollars (\$525,000.00) in the following manner:

1. Upon receipt of the completed plans and specifications outlined in Article I, a payment of Thirty-Five Thousand Dollars (\$35,000.00) shall be advanced for architectural fees.
2. Progress payment requests shall be submitted complete with a detailed cost breakdown and Statutory Declarations on a monthly basis to the Regional Advisor (Engineering & Architecture) for approval. These requests shall be signed by the supervising architect. The Regional Advisor (Engineering & Architecture) shall verify the progress of the work and approve/not approve progress request within ten (10) days, and payments will be due within five (5) days thereafter.
3. The Council shall provide funding for furnishings and landscaping through other sources.
4. With the request for final payment, the Council shall ensure that the following is provided:
  - (a) Final Statutory Declaration;
  - (b) Workers' Compensation Board Release;
  - (c) Copy of Electrical Inspection Certificate;
  - (d) Copy of Plumbing Inspection Certificate.

KEHEWIN BAND COUNCIL

DEPARTMENT OF INDIAN AFFAIRS  
AND NORTHERN DEVELOPMENT

Ms. Shina Gabe  
Chiefess

Fred G. Walsh  
Regional Director

John Gabe  
Councillor

S. Kumpac  
Witness

David John  
Councillor

July 24 / 74  
Date

William John  
Councillor

John Blawie  
Councillor

Stephen Gabe  
Councillor

Andrew Gabe  
Witness

July 25 / 74  
Date

July 25/74

## APPENDIX "A"

INSURANCE SCHEDULE

1. The Council will ensure that insurance is provided in accordance with Articles 20 and 21 of the General Conditions of the contract for stipulated sum contract detailed on R.A.I.C. - C.C.A. Document No. 12.
2. The insurance policies maintained shall describe the work named in the contract and contain a provision that the policies may not be cancelled or materially changed without permission in writing by the Regional Advisor (Engineering & Architecture).
3. All insurance policies maintained shall be issued in the joint names of Her Majesty the Queen in Right of Canada as Represented by the Minister of Indian Affairs and Northern Development and the Council, as their respective interests may appear.
4. The copies of all insurance policies maintained shall be filed with the Regional Advisor (Engineering & Architecture) prior to submission of the first progress claim.