PROVINCE OF BRITISH COLUMBIA

Minister of Public Works

REPORT

FOR THE FISCAL YEAR

1963/64

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1965

To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Department of Public Works for the fiscal year ended March 31, 1964, in compliance with the provisions of the *Public Works Act*.

W. N. CHANT,
Minister of Public Works.

Office of the Minister of Public Works,
Parliament Buildings, October 29, 1964.

"If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them."—*Thoreau.*

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As in previous years, this Report contains examples of work by artists and architects of the Department of Public Works.

"We must lead, not follow."—*Public Works in British Columbia, 1961–62, 1962–63.*

The Honourable W. N. Chant,
Minister of Public Works,
Parliament Buildings, Victoria, B.C.

SIR,—*I have the honour to submit for your consideration the Annual Report of the Department for the fiscal year ended March 31, 1964.*

Elsewhere in this Report will be found those of the heads of divisions. These set out work accomplished and planned, tenders let and accepted, and Departmental accounts.

The cost-of-construction index continues to rise. Increased costs, both for labour and materials, have accompanied the strong Provincial economy. In an endeavour to offset these increases, at least in part, the Department is continually seeking designs and materials which effect economies without sacrificing space or quality. This is perhaps the most challenging task facing us.

Reaction to the sharp improvement in design of new Government buildings indicates enthusiastic approval. The compliments have been most gratifying, many of them coming, as they have, from past critics of lack-lustre architecture. Nowhere can this trend be seen to better advantage than at the Burnaby Vocational and Technical School, where the work of six years ago can be compared with that of today.

I am pleased also to report that the standard of workmanship in construction is very high. Close supervision, coupled with good plans and specifications, is producing a superior level of quality in public buildings. This is as it should be.

Although by no means glamorous, or even very noticeable, maintenance of buildings is becoming a major part of our work. Each new building must be kept in a good state of repair, cleanliness, and order. It is not inconceivable that in time the cost of this task will equal or surpass that of new construction. In this field the Maintenance Division, fully and completely organized only four years ago, is most adequately fulfilling its role. The improvement in appearance and repair of older Government buildings amply demonstrates the value of this organization.

This has been a year of very hard work for the staff. Faced with a sharply expanded building programme, they have responded cheerfully and willingly. The results of their good work are apparent, and I would like to record my thanks to them.

A. E. WEBB,
Deputy Minister.

REPORT OF THE PROVINCIAL ARCHITECT

"We make our buildings, and our buildings make us."—*Sir Winston S. Churchill.*

Noah Webster defines the word "report" in this context as "a formal or official account." This traditionally produces a sober document, be it governmental or commercial in origin. It took about 25 centuries to adopt the Confucian philosophy that the eye is quicker to assimilate a picture than to digest the written word.

To some extent the format of the Annual Report has been modified this year to enhance that philosophy with the introduction of coloured photographs.

Modern buildings designed by the Department of Public Works are not, for the most part, as described by some critics—"drab concrete boxes with congoleum floors." They are designed to be functional, economical, and attractive, and to evidence discreet contemporary feeling in their architecture.

It is sincerely hoped that, after viewing the coloured photographs, readers of the Report will study the purely factual matter in order to comprehend something of the work of the Department.

It should be early recognized that the production of any Government building is essentially a team effort initiated at a high echelon level and carried through by seven principal participatory divisions. These are the Architectural, Structural, Mechanical, Electrical, Landscaping, Planning (sites), and Construction and Maintenance. Each division's work is dependent on, and closely related to, each other division's contribution.

The work of the Architectural Division, specifically dealt with in this phase of the Report, falls into two principal categories: (1) Contracts that were let during the fiscal year 1963/64, and (2) projects that were being researched and planned during this same period.

CATEGORY 1

Twenty-six principal capital contracts were let. Of these, 55 per cent were for Vocational School and Institute of Technology projects, 34 per cent for six individual Government departments, and 11 per cent on general Government work.

Seven contracts of considerable importance may be singled out for brief mention.

1. *Vancouver—College of Education, University of British Columbia, Phase 2.*—With the completion of the four-story Classroom Block and the seven-story Faculty Office Block, having a gross floor area of 105,000 square feet, Phase 2 of the work will be completed. The future and final phase is described in Category 2.

2. *Vancouver—Jericho Hill School, Classroom Building, Industrial Arts and Home Economics Building.*—This facility of 62,000 square feet will provide well-planned space for classrooms, a library, vocational instruction rooms, and play areas for 240 inter-senior deaf and some blind boys. A fallout shelter will be provided for all the occupants of the building.

3. *Abbotsford—Animal Pathology Laboratory.*—This building will be located adjacent to the Trans-Canada Highway, and will provide laboratories for diagnosing disease in live stock and poultry, and will be of considerable aid to farmers in the Fraser Valley in the prevention of disease. The equipment and finishes of the building, occupying approximately 13,500 square feet, will be of the highest order, vastly superior to the conditions under which such work has previously been carried out at the University of British Columbia.

4. *Oliver—New Government Offices.*—This new building will accommodate, in addition to a Magistrate's Court and adjacent offices, space for seven Government departments. The gross area of the building will be 16,600 square feet, and it will be located in a developing civic centre, with the new Federal post office immediately adjacent.

5. *Creston—New Highways Department Establishment.*—A group of buildings designed for the repair, maintenance, and storage of Highways equipment. There will be a large maintenance workshop, 144 by 61 feet, a four-bay equipment-storage warehouse, and an oil-fuel store. This establishment will be of prime value for such work as snow removal on the magnificent new Salmo–Creston ("Kootenay Skyway") artery recently officially opened.

6. *Haney—Allco Institution.*—The first of a number of dormitory and ancillary facilities for alcoholics was designed for the Corrections Branch of the Attorney-General's Department.

7. *Quesnel—New Government Offices.*—A primary contract was let relating to land-clearing, foundation, and basement work to expedite the second and final phase of construction. This handsome building will provide, in addition to an Assize Court, accommodation for 11 Government departments. The gross area of the building will be approximately 45,000 square feet. It will undoubtedly be the finest building of its kind in the North Cariboo District.

CATEGORY 2

Twenty-eight important projects were in the planning stage during the fiscal year under review, primarily for seven Government departments.

Department of Mental Health

1. *Essondale—North Lawn Building, Annex.*—Preliminary programming and planning were started for a medical clinic as a linked annex to the North Lawn Building. It would provide added improved surgical and medical facilities, with 35 post-operative beds, an out-patient department, and substantial consolidation of several vital hospital services.

2. *Essondale—Hillside Building.*—This building was designed to replace premises previously destroyed by fire. It is planned to accommodate 60 active patients, with dining and dayroom facilities.

3. *Essondale—General Consideration of Garbage Handling and Disposal.*—A preliminary over-all study of this large and complex problem was inaugurated, and considerable research was made by this Department, in collaboration with the authorities concerned, into various new methods and techniques.

4. *Essondale—East Lawn Building, Garbage Handling and Disposal.*—Active planning was commenced, based on the findings referred to above, with specific attention being paid to the remodelling of the existing facilities in the kitchen and disposal areas.

5. *Essondale*—Public Works Storage and Maintenance Building.—Continued planning and development of the building were carried on in order to provide the maximum facilities required for the considerable volume of maintenance work required at the Mental Hospital.

6. *Colony Farm—New Scullery.*—Plans were started for a new scullery with modern equipment for processing and handling the considerable volume of vegetables used every day throughout the Mental Hospital. These facilities will bring conditions to a more efficient level than has been possible hitherto.

7. *Vernon—Dellview Hospital.*—In order to provide better facilities and equipment, a new boiler-house was designed to meet current and future needs at the hospital.

8. *Victoria—1904 Fort Street, Mental Health Centre.*—A large apartment house was purchased, and remodelling plans drawn up to provide a mental health centre for the Victoria area for out-patient consultative work.

Attorney-General's Department

1. *Prince George—Addition to Men's Gaol.*—Remodelling plans were commenced to provide the existing gaol with additional accommodation and facilities for 36 prisoners in cells and 40 in dormitories. This addition will provide approximately 33,000 extra square feet of space.

2. *Haney—Allco Institution.*—Continued planning of the institution called for the preparation of plans for two additional dormitories, similar to the prototype, with planning of kitchen and stores facilities.

3. *Oakalla Prison Farm*—Westgate Building.—Extensive alterations were planned to enlarge the scope of the Westgate Building.

4. *B.C. General—Gaol Prototype.*—Research was carried out in connection with the design of a prototype gaol for construction as and where necessary in various locations in the Province.

5. *Vancouver Island—Men's Gaol.*—The prototype gaol referred to above was developed in detail for specific use on a site situated within easy access of both the ferry terminals of Nanaimo and Victoria. The gaol is intended to house approximately 220 prisoners and about 75 staff.

Department of Education

1. *Vancouver—University of British Columbia, College of Education, Phase 3.*—Planning of the final building of the complex was started with the design of a gymnasium-classroom building as an integral part of the teacher-training curriculum.

2. *Burnaby—British Columbia Vocational School.*—With the completion of the new Administration Building in sight, plans were drawn up to convert the old temporary Administration Building and No. 7 Building to other vocational uses.

3. *Burnaby—British Columbia Institute of Technology, Dry-kiln.*—An experimental dry-kiln was planned to enable studies to be made under different scientific techniques of methods of kiln-drying lumber.

Department of Highways

1. *Penticton—Department of Highways Establishment.*—This establishment was designed using the Creston buildings as prototypes, except for a small reduction in size of the large maintenance-shop.

2. *Langford—Department of Highways, Addition to Sign-shop.*—Due to a lack of working and storage space for fabricating and painting the ever-increasing number of highway signs, an additional separate, but linked, building was planned.

Department of Recreation and Conservation

Bull River—Kootenay Fish Hatchery.—Following the completion of the civil engineering aspects of the project consisting of the dam and allied water work, planning was started on the main hatchery and the ancillary external work. When completed, this project will be one of the most advanced of its kind in the West,

undoubtedly providing in the Kootenays a great tourist attraction for both sport fishermen and non-anglers alike.

Provincial Secretary's Department

Jordan River—Emergency Storage Warehouse.—Planning was started on a warehouse in which to pre-position medical supplies in case of a peace- or war-time emergency. It will contain the basic elementary supplies needed for a 100-bed hospital.

As such it is the first building of its kind in British Columbia, and possibly elsewhere in Canada. The project was undertaken in liaison with the Provincial Secretary's Department and the Emergency Health Services Division of the Department of Health Services and Hospital Insurance.

GENERAL

1. *Duncan—New Government Offices.*—Preliminary negotiations were conducted with the City of Duncan with regard to the planning of new Government offices on the site of a proposed new civic centre. The new buildings will provide Courts and accommodation for nine Government departments. The gross area of the buildings will approximate 27,000 square feet. These new structures will be unique and striking in character, and will make an outstanding contribution to the civic centre.

2. *Fort Nelson—New Government Offices.*—Plans were started for a relatively small new building to provide minimal space for 11 Government departments, with provision for expansion at a later date. An Agency residence will also be provided.

3. *Ganges—New Government Offices.*—A small new Government office building with a Magistrate's Court was planned for Saltspring Island administration. It will accommodate three other Government departments. A unique feature of this building will be all-electric heating. If this proves as successful from all standpoints as confidently expected, it might well start a trend in certain other future Government buildings.

4. *Kelowna—Additions to Government Offices.*—A preliminary feasibility study was made to ascertain how these offices could be expanded to meet the growing needs of the community.

5. *Cranbrook—Additions to Government Offices.*—Similar studies were made and planning was commenced to enlarge the present building.

6. *Deas Island—British Columbia Ferry Authority Establishment.*—Plans were started for the development of a maintenance establishment for Government ferries. The first building planned was a large steel-frame structure to house various types of fuels, lubricating-oils, and paint.

7. *Vancouver—Addition to and Remodelling Pender Street Liquor Store.*—Extensive plans were commenced for remodelling the existing store for the Liquor Control Board. In addition, an area has been planned for a vending outlet for rarer vintages.

8. *Victoria—New Museum.*—Following extensive site tests and examination of the site bounded by Government, Belleville, Douglas, and Elliot Streets, a Programme Committee was set up in February, 1964, composed of senior officials of the Departments of Public Works, the Provincial Secretary, and Recreation and Conservation. The task of this Committee was to formulate the over-all policy of the Museum, its broad scope and space requirements—a task requiring a vast amount of research, imagination, and planning.

GENERALLY

During the fiscal year under review, 23 projects for senior citizens' housing were reviewed for the Provincial Secretary's Department. In the majority of cases, detailed recommendations were made by the Department of Public Works for improving planning and construction methods and for reducing costs.

Similar recommendations were made on behalf of the Lands Service for buildings to be constructed on the University of British Columbia Endowment Lands.

Working Group No. 5, Interdepartmental Emergency Planning Committee, examined plans submitted by municipalities applying for construction grants for civil defence measures.

It is fitting at this time to pay tribute to the late Brig. James F. A. Lister, Provincial Civil Defence Co-ordinator. His unfailing courtesy and co-operation made liaison between his department and Working Group No. 5 smooth and working with him a sincere pleasure.

In summary, while the volume of work put out to tender was less than in the preceding fiscal year, more planning on future projects was achieved. It would appear that with the Province's expanding economy this Department's work in the new fiscal year will be considerably amplified.

It is a pleasure, once again, to be able to report that all members of our staff worked with energy and enthusiasm. Good co-operation was achieved with other divisions, bearing in mind the liaison problems involved with the divisions occupying six widely separated locations in Victoria and one in Vancouver.

For the value that tight liaison can be in expediting production, it is hoped that in due course this situation will be remedied.

W. R. H. CURTIS, M.R.A.I.C., A.R.I.B.A., A.N.Z.I.A.,
Provincial Architect.

REPORT OF THE SENIOR ELECTRICAL DESIGNER

Many interesting electrical projects were designed and undertaken by the Electrical Design Division during the year.

We continued to carry out extensive electrical designs for many other Government departments in addition to our own Public Works projects.

One of the major projects completed for the Department of Highways this year was the electrical design for the Port Mann Bridge. The complete lighting and electrical design, including supervision of installation, was carried out by this Division. A few points on this project are worthy of mention. The handrail lighting system used on this bridge is the longest continuous installation of this type of lighting in the world at this time. There are 1,701 handrail lighting fixtures, 174 lighting circuits, plus 14 auxiliary control circuits, and they are so designed that not more than 240 feet of lighting on any one side will be out due to damage of bridge railing. In the event of any one circuit failing, only every third fixture up to a total of 10 units would be out of service. This would ensure that no portion of the bridge would be in darkness unless by complete hydro failure. There are over 12 miles of lighting-circuit wiring and over 3 miles of multi-conductor power

cable used on the installation. The entire lighting is controlled automatically by photo-electric control. We, as a Public Works division, were proud to have had the privilege, through the co-operation of our Deputy Minister, of carrying out the lighting and electrical design on this major highway link.

A total of over 85 rewiring alterations and additions was designed and carried out for the Construction and Maintenance Division during the year.

Electrical designs correlated with the Architectural Division saw the completion of such units as the Oliver Government Building, Kelowna and Nelson Vocational Schools, Cafeteria and Boiler-house of the British Columbia Institute of Technology at Burnaby, and Phase 1 of Allco Infirmary at Haney. Other large projects still under construction include Deas maintenance buildings, Highways establishments at Penticton and Creston, Phase 2 of Allco Infirmary, Animal Pathology Unit at Abbotsford, Jericho Hill Classroom and Arts Block, University of British Columbia College of Education (Phase 2), Quesnel Government Building, and also weigh-scale stations at Prince George and Hunter Creek.

It is interesting to note that we have just completed the design on the new Ganges Government Building, which will be the first Government building which will be equipped with all-electric heating. Each office will have its own thermostat control, allowing the personal selection of temperatures in each individual office. A master controlled thermostat will reduce the temperature to a low level after working-hours and automatically reset to normal temperature prior to work commencing.

A large number of electrical designs were also carried out for Departments of Education, Recreation and Conservation, Commercial Transport, and Highways, and the British Columbia Ferry Authority.

We have continued to work with the Supervisor of Telephones and the British Columbia Telephone Company in design of cable installation and co-ordinated work. These installations are continually changing in order to keep pace with Government expansion.

Technical advice and guidance were given to the electrical maintenance staffs throughout the year. The co-operation and co-ordination extended by the Architectural, Construction and Maintenance, Mechanical, and Structural staffs have been excellent.

Difficulty is being experienced in maintaining staff requirements due to large demand in the outside field.

Our thanks to the various departments mentioned, who gave us their utmost co-operation during the carrying-out of their projects.

J. R. WALKER,
Senior Electrical Designer.

REPORT OF THE CIVIL AND STRUCTURAL ENGINEER

"It is the forms, the shapes and the patterns of architecture which everyone first apprehends and which also have survival value."—*H. R. Hitchcock.*

The past year was a continuation of the high level of design and construction activity experienced during the previous year. Among the more important buildings designed were the Oliver Courthouse, Jericho Hill complex in Vancouver, vocational schools, and many others.

Many people do not realize the variation in design conditions which exist and have to be taken into account in British Columbia. We are all aware of the geographical and climatic zones of British Columbia, varying from Prairie climate in the Peace River area to the mild coastal climate of the Lower Mainland. This extreme variation is not experienced in any of the other Canadian Provinces.

It can readily be appreciated that great care must be taken to evaluate all materials for the area of the Province in which they are to be used. It is also obvious that construction methods and materials suitable for one area will not be suitable for another.

One of our greatest problems is winter construction in the colder areas of the Province. Winter concreting techniques are quite well established and involve keeping the concrete from freezing during its setting period and for approximately three days after. After design strength is attained, no further protection is required. The pouring of footings on ground liable to freezing is a much more difficult problem. It is apparent to anyone who has lived in a cold climate that ground will expand when frozen, providing it contains some moisture. This is noticeable in cracked and inclined sidewalks, walls, and some structures. It is for this reason that foundations for buildings must go down below the influence of any frost action. This safe depth can be as low as 9 feet in some areas of the Province. When foundations are to be poured on areas of frozen ground, the ground must first be excavated to a point below the zone of freezing. These excavated areas then have to be protected from freezing until the freezing weather is over or heat is introduced into a building, or the ground backfilled up to original grade. The most awkward buildings to protect are buildings with large basement areas, all of which must be protected against freezing.

Protection against freezing is usually obtained by either (1) covering the excavated areas with some form of insulation, such as sawdust, etc., or (2) erecting a temporary covered structure over the area with some form of heating, or (3) a combination of the above.

In addition to protecting footings from frost action, one must also protect services such as water, drains, sewers, septic tanks, etc. Due to the latent heat in sewage, sewers need not be buried as deep as water-mains. Sidewalks, curbs, road foundations, etc., cannot obviously be carried below the frost-line, so one must try to keep frost damage on these items to a minimum. This is usually done by drainage and a sufficient depth of granular materials.

Our thanks go out to the various departments who assisted us during the year, in particular the Topographic Division, Department of Lands, Forests, and Water Resources, for survey work.

J. R. SIMPSON, B.SC., A.M.I.C.E., DIP. PUB. ADMIN.,
Senior Structural Engineer.

REPORT OF THE SUPERVISOR OF TELEPHONES

"Those only deserve a monument who do not need one."—*Hazlitt.*

This Division has, throughout the fiscal period under review, continued its endeavour to equip all Government offices with sufficient communication to allow efficient operation.

Since the Department of Public Works assumed responsibility for all telephones for all departments, more complete control has been gradually and progressively exercised. Many surveys of existing equipment have been made and are continuing. Where equipment in excess of needs is found, revisions are made. Every single request for extensions or additions to existing equipment receives the closest scrutiny, and only that portion absolutely necessary installed.

The high cost to the people of this Province makes such stringent control necessary. Not only are there new buildings and additions to be serviced, but area rates are continually receiving upward adjustment.

In the face of such increases it is not feasible to maintain the status quo, much less reduce. Without the control mentioned, however, the increase would have been much greater.

In addition to the foregoing, a great deal of effort has been put forward to raise the level of efficiency of existing equipment. Results cannot be measured in terms of dollars and cents, but we feel sure that the better use of telephone equipment has sharply reduced the need for written communications, effecting substantial reductions in letter-writing, in time, and in file space.

Long-distance calls continue to increase, but are carefully checked for unauthorized calls or calls of unnecessary length. Calls on a local level are on the increase, and have been handled to the best of our ability with staff and switchboard equipment available.

New automatic switchboards were installed at the Nelson Courthouse and Motor Vehicle-Motor Carrier offices, Vancouver. Proposed conversion to automatic for Pearson Tuberculosis and Polio Hospital, The Tranquille School, The Woodlands School, and Oakalla Prison Farm were not completed as scheduled in the interests of economy.

The continued growth of Government services has, with accelerated momentum, imposed greater pressure on our operators. We are indeed fortunate in having such a high standard of employee. Without their training and ability they would have been unable to put forward the extra effort required of them, much less maintain the degree of courtesy and efficiency which has earned them such a high reputation.

We wish to thank all departments of Government for their patience and understanding, as well as for their co-operation in keeping communication services to the minimum during the past fiscal year.

(Miss) R. E. THOMPSON,
Supervisor of Telephones.

REPORT OF THE LANDSCAPE ARCHITECT

"The reality of building consists not in the walls and roofs but in the space within and without to be lived in."

In pursuing the objective of making Government properties lead the way in the field of landscaping of public buildings, this Division has carried out further extensive works during the fiscal year under review.

With projects such as the large vocational schools at Burnaby, Nanaimo, Prince George, Kelowna, and Nelson, all now well on the way to completion, the Division has endeavoured to obtain a more dynamic æsthetic plant arrangement in its relation to site-space form within the functional requirements of the projects.

Landscape architecture may be termed an involved art-science having two distinct closely integrated branches of spatial design, which we may commonly term as hard and soft landscape. Structural elements, designs in refined processed materials, are always physically apart by their own nature, yet we find that planting or "soft landscape" is seldom so isolated, and if so only by choice.

There is, however, another aspect of the branch of design that deals with plant elements and spreads its effects over the structural forms of design governing their selection and arrangement; this is maintenance. This Division is having to give ever more serious thought to this aspect as the development of current projects grows.

Many Government properties throughout the Province have required extensive remedial work, and this has been planned as a progressive programme. Courthouses at Prince Rupert, Vanderhoof, Prince George, Kamloops, and elsewhere have received this attention, and the resulting improvement has brought many appreciative compliments from members of the communities involved.

All the new and remedial work, of course, requires adequate maintenance if the benefits are to be lasting ones.

Moreover, this governing area of maintenance is an important factor in the selection, arrangement, and use of equipment and buildings, research and technology, and the training of labour. All three of these are interdependent and highly important to the well-being and economical development of our æsthetic creations. Within this area, qualified labour is one of the most diverse in quality and elusive in permanence, while being vital to the success of the work and yet the most difficult to obtain.

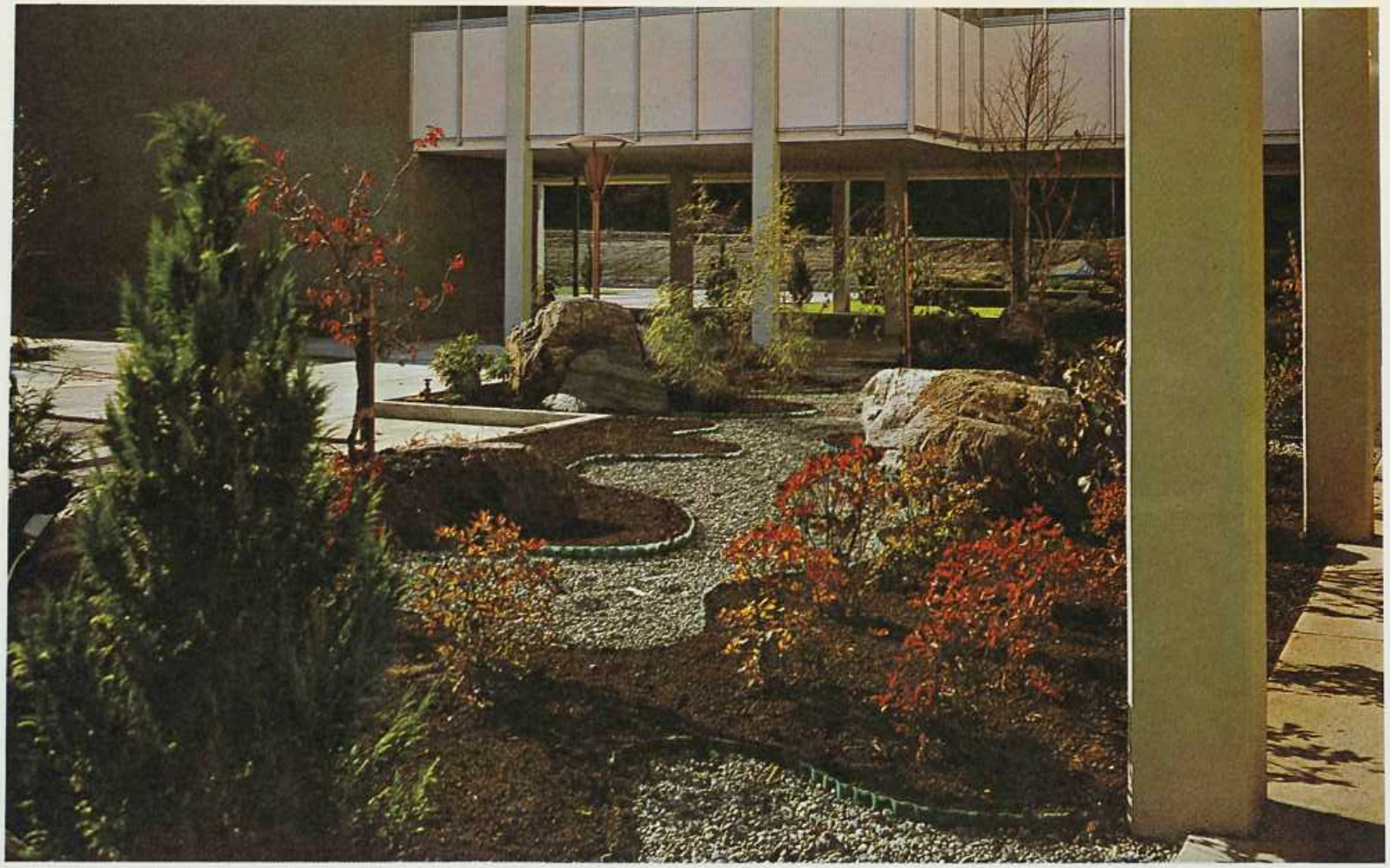
The Government has been in the forefront in assessing this condition and advancing a method of relieving the condition by the technical training programme toward establishing a horticultural worker of higher technical skill in all branches of the field.

Fewer and fewer of the younger generation have been turning to horticulture, and the seriousness of the home labour situation is well emphasized by the sharply increasing number of foreign workers employed on the land.

Whether this is good or bad from the point of view of production is difficult to decide at the present time, but that there should be a need for supplementing the basic horticultural staff of skilled old-timers with foreign workers, who have to accustom themselves to new techniques and new and various climatic conditions, is not in itself an encouraging feature.

Horticulture is, at this period, in a state of flux and in an era of rapid change in both modern training and usage.

Production costs are increasing in all fields of horticultural endeavour, thereby causing a demand for more concentrated areas of production, greater mechanical efficiency, and, therefore, much increased technical skill by operators in the labour



Inner court, British Columbia Institute of Technology, Burnaby.

Cafeteria, British Columbia Institute of Technology, Burnaby.

force to produce economic results; to achieve this we can spell the formula in one word—training.

This does not only apply to the field-worker, but covers the whole problem not only within the larger commercial field, but in the landscape and research divisions also, which have an ever-expanding amount of work to accomplish. The chemist, the plant pathologist, and the engineer can do much to ensure a thriving horticultural industry of the future, but a basic knowledge of plant husbandry will always rank as the highest requirement for success.

To further this training and supply the basis for study of exotic tropical plants, this Division has been able to erect two of the latest automatically controlled glass houses, screened against insect damage, and with all fittings so constructed as to harbour the minimum of disease-bearing spores.

We hope these houses will provide a stimulating field for instruction of both the student and practitioner alike, especially in the sphere of unusual genera.

R. H. SAVERY, A.I.L.A., B.C.S.L.A.,
Landscape Architect.

REPORT OF THE CONSTRUCTION AND MAINTENANCE ARCHITECT

"Old houses mended
Cost little less than new before they're ended."
—*Colley Cibber.*

MAINTENANCE AND BUILDING MANAGEMENT

The 1963/64 fiscal year proved to be a period of unprecedented activity by this Division in fulfilment of its dual role as a Maintenance and Construction Division of the Department.

During the period under review, the appointment of a Superintendent of Works located at Prince George, for the purpose of supervising maintenance and building management in that northern area of the Province, has proved to be the most significant development of our organization in this period.

This step has enabled us to eliminate many costly and time-consuming references to headquarters on matters which can be resolved more expediently and with greater efficiency nearer their source of origin.

Throughout the year the headquarters component of this Division has inspected buildings and property in all areas and, when required, prepared and supplied specifications, drawings, technical and professional advice to our works zone representatives.

Upon completion of major additions to the Vocational School, Nanaimo, our attention was directed toward improving and providing a consistently high standard of maintenance to all buildings located upon Vancouver Island. This objective was achieved by placing the responsibility for the daily supervision of maintenance upon our Superintendent of Works in Victoria and the formation of Works Zone No. 1.

These and many other minor organizational changes became necessary in order to keep abreast of our responsibility to provide maintenance service to an ever-increasing number of new buildings.

One hundred and five specifications and drawings were prepared and contracts let for all types of work by headquarters staff, in addition to those originating from our five superintendents' works zones. A selection of contracts considered to be of of a major nature is listed below:—

(1) Cranbrook Courthouse: Interior and exterior decoration.

(2) Prince Rupert Forestry Building: Renewal of floors and coverings, waterproofing of exterior masonry.

(3) Rossland Courthouse: Repairs to slate roofing, flashings, and the installation of insulation to eliminate condensation problems.

(4) Prince Rupert Courthouse: Restoration of exterior masonry and waterproofing.

(5) Fort St. John Courthouse: Interior and exterior decoration and repairs.

(6) Fort St. John Courthouse: Finishing of basement for offices and use as X-ray suite.

(7) Salmon Arm Courthouse: Remodelling basement accommodation vacated by R.C.M.P. for use of Motor-vehicle Testing Branch, also remodelling Courtroom facilities.

(8) Kelowna Courthouse: Renewing bases and decorating interior of building.

(9) Rossland Courthouse: Interior decoration.

(10) Revelstoke Courthouse: Interior decoration, exterior restoration and cleaning.

(11) Pouce Coupe Courthouse: Interior decoration and repairs.

(12) Grand Forks Courthouse: Alterations to R.C.M.P. and Highways offices.

(13) Sundry renovations and redecoration of residences, lockups, institutions, and other buildings.

In addition to this work, upon acquisition of the Rayleigh Army Camp from the Department of National Defence, this Division surveyed the accommodation, prepared plans and specifications for its conversion to a prison camp, and arranged for the supervision and successful completion of the work under the direction of our superintendent in the zone.

Plans and specifications were also prepared in this period to provide new toilet and bathing facilities in the New Haven Borstal School, and have been supplied to our local representative.

Conversion of accommodation at Nelson to provide testing-laboratory facilities for use by the Department of Highways entailed preparation of plans and specifications and subsequent supervision of the work by this Division's personnel.

In pursuance of policy this Division continued to give service to various boards and commissions. Drawings and specifications were prepared for ferry terminal buildings at Long Harbour and Village Bay, also advice and professional aid were rendered to the Right-of-way Division of the Department of Highways with reference to real estate in the Fraser Valley area. At the request of the Liquor Control Board, property was inspected, specifications prepared for work, and a variety of professional and consultant services given in respect to the buildings under the jurisdiction of the Board.

Throughout this year we have kept close liaison with our superintendents in the five works zones, who, with their maintenance crews, have carried out a very full and successful maintenance programme.

I would like at this time to express my appreciation for the help we have received from Government Agents, Highways personnel, and many others who have acted on our behalf in the Interior.

CONSTRUCTION

The volume of construction in this period surpassed all totals previously recorded.

Despite this heavy programme, we were able to initiate improvements in our method of operation in order to expedite the work and improve our function as a co-ordinating body, in our opinion a very vital and exacting task when so many people were directly and indirectly concerned with the construction of various projects.

A study was made to ascertain the most useful type of testing equipment and literature available for supply to our project inspectors, in order to supply them with means to scientifically ensure that the materials and methods used in the construction of our projects meet specification requirements. In this respect, the specification section of the Design Division has been most helpful in providing data on special finishes and samples of approved products for comparison by our inspectors with material delivered on site.

Although there is a growing tendency to employ a greater number of specialists to check various portions of building work under construction, I am convinced that, with the exception of testing procedures requiring laboratory facilities, our field staff is competent and capable of providing a very comprehensive inspection service.

The following major projects were under construction during this period, and those projects inspected on completion and accepted from the general contractors have been identified by the addition of the date of acceptance:—

(*a*) Nanaimo Vocational School—Administration Classroom and Cafeteria (September, 1963).
(*b*) Burnaby Vocational School—Administration Building (November, 1963).
(*c*) Burnaby Vocational School—Cafeteria.
(*d*) British Columbia Institute of Technology (January, 1964).
(*e*) Nelson Vocational School (December, 1963).
(*f*) University of British Columbia—College of Education, Phases 2 and 3.
(*g*) Kelowna Vocational School (September, 1963).
(*h*) Quesnel Courthouse—foundations and basement, Phase 1 (March, 1964).
(*i*) Jericho Hill School for the Deaf and the Blind—dormitory block (February, 1964).
(*j*) Abbotsford Animal Pathology Building.
(*k*) Victoria University—Sciences Building (November, 1963).
(*l*) Allco—Dormitory Unit No. 1.
(*m*) Conversion and renovation of Valleyview Nos. 1, 2, and 3 (February, 1964).
(*n*) E.H.S. and E.H.W. storage buildings, Jordan River.
(*o*) Random Poultry Testing Station—additions.

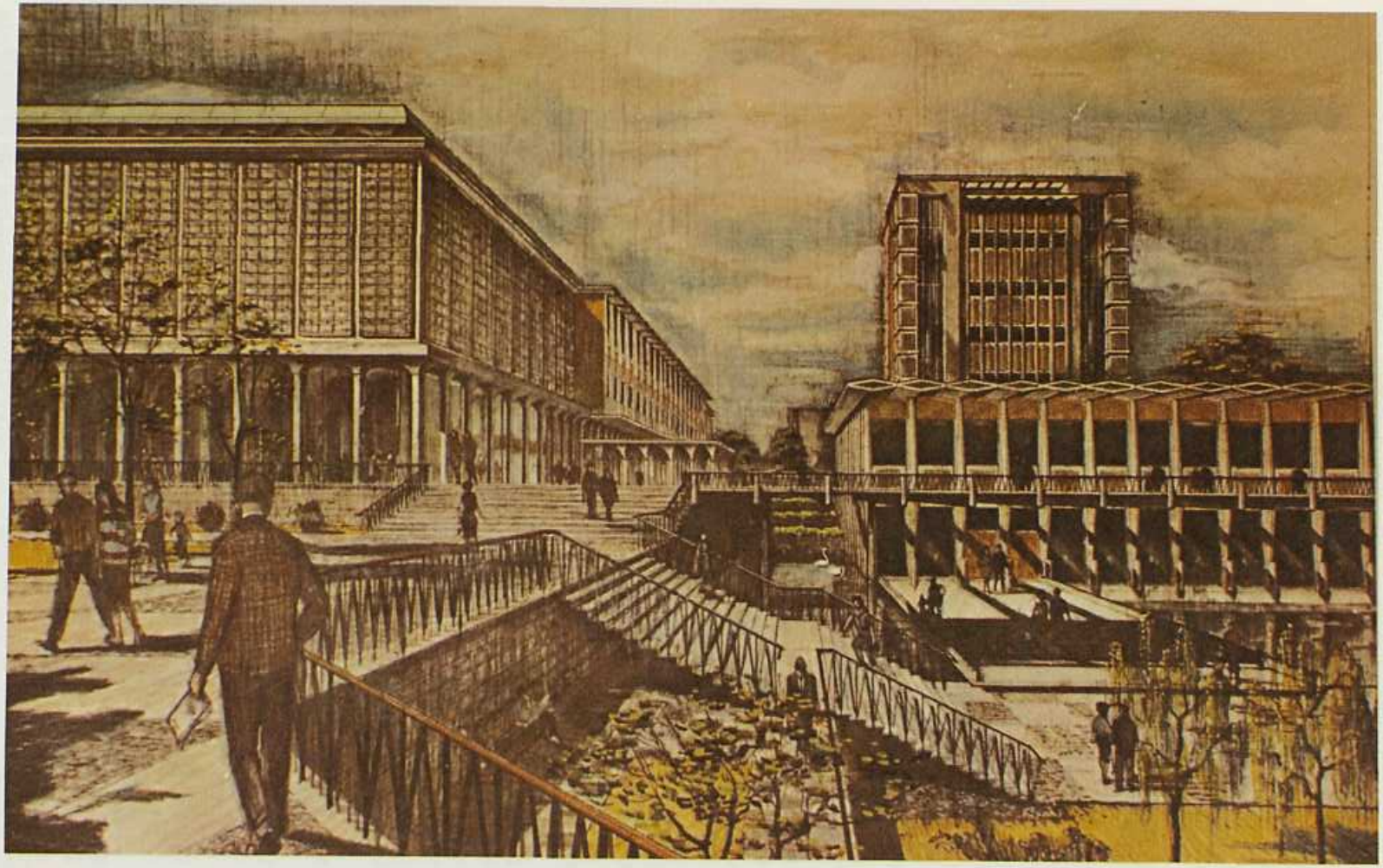
Throughout the year frequent conferences and active liaison were maintained with the Mechanical, Electrical, and Structural Division, who, besides, aiding us in the construction programme, have made valuable contributions in their respective fields in designing replacement, modernization, and renovation to the services in existing structures.

In conclusion I would like to convey my thanks to this Division's diversified works force throughout this Province, who have, by their efforts, ensured the success of our works programme.

STANLEY LLOYD, M.R.A.I.C., A.R.I.B.A., DIP. PUB. ADMIN.,
Senior Construction and Maintenance Architect.

New Provincial Government office building, Duncan.

New Provincial Museum, Victoria.



New Provincial Museum, Victoria.

Administration Building, Burnaby Vocational School.

REPORT OF THE MECHANICAL ENGINEER

"Some folks are like blisters—they don't show up until the work is finished."

GENERAL

Certain projects stand out above others. They need be neither large nor complicated. They stand out because of the ingenuity and finesse required to solve a given problem. The designer obtains a great deal of satisfaction from them.

The practice water-tube steam boiler installed this year in the British Columbia Institute of Technology in Burnaby is just such a project.

The boiler-house at the British Columbia Institute of Technology is more than just another building housing heating units for the Institute. It is part of the heat laboratory and machine-shop, all designed with the intention that every piece of equipment will be used as a teaching instrument. This concept extends the heat laboratory beyond its usual heat engines, calorimeters, and heat-exchangers, to functional and operating equipment. It gives the student of thermodynamics an easy transition from the laboratory apparatus to the practical operating equipment.

The heating-plant portion of the laboratory consists of three fire-tube hot-water boilers of the modern packaged type. These are of Scotch marine design, fully controlled so that they tie in automatically with the heating requirements of the Institute. There is also another fire-tube steam boiler of the same design and a water-tube steam-generator. The fire-tube boilers demonstrate and contrast the different types of boiler trim required for hot water or steam. The steam boilers supply the requirements of the Institute's laboratories and cafeteria.

Fuel for the plant is natural gas with oil as stand-by. Both a light fuel-oil and a heavy fuel-oil are stored, so that students can observe the differences required in handling of both.

Each boiler is fitted with dual fuel burners so arranged that either of the fuels can be used upon a few minutes' notice.

But it is the water-tube steam-generator that is unique. It is a practical boiler unit set up as a teaching unit. This little boiler, with an output of only 5,000 pounds of steam an hour, has been set up with controls and instruments similar to a power generating boiler of many, many times its capacity and size. In fact, the small size created some of the space and arrangement problems. Further, it has the following features incorporated into the control and instrument system which are not found on the large units:—

(*a*) All steps in starting up, operating, and shutting down the unit can be manual or automatic, as the operator wishes.

(*b*) Each step must be "proven" prior to the next being initiated under either manual or automatic operation.

(*c*) Each step will "fail safe."

(*d*) The instructor can set up a failure in any of the sequential steps so that a student would have to determine the trouble before the next step can be taken.

Students, under the watchful eye of the instructor, can start, operate, and close down this unit with probably greater safety than that of driving a car along a highway.

This little steam-generator is also instrumented so as to enable a full boiler test, according to the American Society of Mechanical Engineers boiler test code, to be

conducted. Heat gains, heat losses, and efficiency can be determined at any operating level.

Hydraulic, electric, and electronic instruments have been used. They have been mounted into three consoles grouped around the firing end of the generator. All consoles are fully accessible from the back so that circuitry can be traced. One console contains the indicating and recording instruments; the second, the indicating, proving, and safety interlocks; and the third, the control operators.

This little steam-generator should be a very great asset to the Institute of Technology in demonstrating the fundamentals of steam generation and instrument application.

CAPITAL PROJECTS

The demand for comfortable conditions, coupled with the increasing cost of building space, requires building services space to be kept at a minimum. These factors require the Division to do better planning.

The Division participated in most of the capital projects handled by the Department. In general, these have been the buildings required in the vocational-school and university programmes, and are described elsewhere in the Departmental Report. This Division accounts for approximately 17 per cent of the value of these projects.

Some of the projects handled mainly by this Division are:—

Essondale—Provincial Mental Hospital: Underground steam and condensate piping to North Lawn Building.

Tranquille—Boiler Plant: (1) Renovations to piping and new ancillary equipment; (2) new instrumentation and control system; (3) new forced-draught fans and wind boxes on Boilers Nos. 1 and 2.

Burnaby—Oakalla Prison Farm Boiler-house: (1) Conversion from coal to natural gas of Boilers Nos. 1 and 2; (2) new instruments and control system.

MAINTENANCE OF MECHANICAL EQUIPMENT

During the year a total of 54 projects was handled by the Division, of which 31 required the preparation of plans and specifications and the letting of contracts. Another 15 involved the preparation of mechanical drawings and specifications for other divisions of the Department to be incorporated into general contracts. Another eight projects required the planning and preparation of drawings and direction of alteration and renovation work carried out by Departmental personnel.

During the year 13 field trips were made to the Lower Mainland, Okanagan, Nelson, and Northern Island areas.

We would like to take this opportunity to thank the superintendents and the chief engineers and their staffs for the co-operation shown to this Division during the year.

W. E. Mills, B.A.Sc., P.Eng., Dip. Pub. Admin.,
Senior Mechanical Engineer.

REPORT OF THE ARCHITECT-PLANNER

" Only the coward wants to know his way."—*Socrates.*

The past year has been one of variety. With the sharply increased tempo of Departmental work has come a corresponding increase in demand for this Division's services. Some plans brought to a conclusion have been highly successful; others have presented problems and in some cases have brought disappointment.

The master plan prepared for Burnaby Vocational and Technical School is beginning to be seen to advantage. This, and the very successful work of other divisions, is something of which the Department may be justly proud. The complex is certainly creating very favourable comment in Mainland circles.

The plan prepared in previous years for Oliver is now nearing completion. Although limited in scope, this plan has been remarkable for the high degree of co-operation from Federal and municipal governments. This plan has been a " break-through " in intergovernmental relations.

Plans and contour models are being made of Crown lands at Colquitz. This attractive area lends itself magnificently to the institutions planned for it.

Consequent on the decision to place the Museum and Archives complex on the area now called the Civil Service parking-lot, supplemental reports and layouts had to be prepared to meet the changed conditions. While the erection of this complex does not defeat the " heart " of the precinct plan, which is the square to the south of the Connaught Library, it will not alleviate the great need for adequate office space. This grows steadily more acute as the result of normal departmental expansion. This deficiency is manifesting itself in the scattering of departments, with our own worse than others, bringing with it a loss of efficiency. These conditions will continue to deteriorate until relieved.

Under active consideration is a suggested layout at Kelowna for the integration of Crown Provincial and municipal lands. This will require patient handling in the initial stages, but, if implemented over a period of years, will fill a need in the area.

The search for sites, in suitable locations, for Governmental buildings continues unabated and with varied results. In this regard the Department is again indebted to the Lands Service, Topographic Branch, for their expert assistance and co-operation in carrying out survey works.

A survey of parking conditions at Essondale has been carried out over a considerable period of time, and an analysis of their findings will be brought down at a later date. The Division is indebted to the Town Planning School at the University of British Columbia for excellent student help in carrying out this project.

Co-ordination of records with the Assessment Commissioner under the *Municipalities Aid Amendment Act, 1963,* continues as in the previous year. This Division is also obligated to the Real Property Taxation Branch of the Finance Department for its assistance in evaluations. Briefs have been prepared on possible advantageous exchange of properties in the Province, and a policy decision in agreement has been handed down which will benefit those taking part.

A very significant event during the year was the purchase of lands in the downtown area of Vancouver as an intended site for future Law Courts expansion.

Worth-while time has been spent on urban renewal projects. Referring particularly to the Courthouse site at Duncan, it is important to stress that the excellent co-operation of the City Council, their planning commission, and their technical

officers has enabled this Department to produce a radical solution designed to put new heart into the downtown area.

Planning policies are intended to make life easier and more convenient by developing in the right places and by improving standards. Nowhere in the world are there greater opportunities than in British Columbia, and in this Province the senior government should—to use our own Departmental slogan—lead, not follow. This is what we are attempting to do. Our efforts are, nevertheless, only beginnings. There is still much to learn and much to do.

"Ignorance is the cause of evil."—*Socrates.*

W. D. LOUGHER-GOODEY, M.T.P.I., M.T.P.I.C., M.I.F.L.A.,
M.A.S.P.O., F.I.L.A., A.I.STRUCT.E.,
Architect-Planner.

Interior of cafeteria, British Columbia Institute of Technology, Burnaby.

Dormitory unit, Jericho Hill School, Vancouver.

REPORT OF THE INSPECTOR OF ELECTRICAL ENERGY

BOARD OF EXAMINERS FOR ELECTRICAL CONTRACTORS

The Honourable Minister of Public Works has been pleased to appoint the following members to the Board, effective January 1, 1964: N. V. Beech, electrical contractor, representing the Vancouver Electrical Association; H. Reid, electrical contractor, representing the Associated Electrical Contractors of British Columbia; and J. Holdom, electrical inspector for the City of Vancouver, representing cities and municipalities. Other members of the Board are L. Robson (Chairman), Chief Inspector of Electrical Energy, and G. A. Harrower, Assistant Inspector of Electrical Energy. Ten meetings were held throughout the year.

The total number of certificates of competency in effect during the year was as follows:—

Class A	218	Class PC	140
Class B	451	Class TA	1
Class C	546		
Class PA	56	Total	1,492
Class PB	80		

Two hundred and fifty-five candidates for electrical contractors' certificates of competency were examined during the year, with the following results:—

Class	Number of Candidates Examined	Passed	Failed
A	43	20	23
B	100	50	50
C	112	61	51
Totals	255	131	124

PERMITS

The total number of permits issued during the year was as follows:—

April, 1963	3,317	November, 1963	3,621
May, 1963	3,598	December, 1963	3,700
June, 1963	3,741	January, 1964	3,830
July, 1963	3,949	February, 1964	3,472
August, 1963	3,718	March, 1964	3,511
September, 1963	3,834		
October, 1963	4,581	Total	44,872

DISTRICT OFFICES AND INSPECTIONS

Office Location	Inspections
Abbotsford	3,127
Alberni	2,500
Bridge River Valley (inspector from Richmond office)	52
Chilliwack	2,625
Courtenay	3,651
Cranbrook	2,223
Dawson Creek	2,295
Duncan	2,686

Office Location	Inspections
Fort St. John	2,221
Gulf Islands (inspector from Richmond office)	97
Kamloops	3,089
Kelowna	2,055
Langley, Delta, and White Rock	2,166
Nanaimo	2,613
Nelson	2,006
New Westminster (three inspectors)	5,289
Penticton	2,750
Powell River	1,791
Prince George (two inspectors)	5,412
Prince Rupert	2,739
Quesnel	1,988
Richmond (two inspectors)	4,076
Trail	1,891
Vernon	2,269
Victoria (three inspectors)	8,270
Total	70,881

CANADIAN STANDARDS ASSOCIATION

The Chief Inspector again represented the Province at meetings of the Canadian Standards Association. Two meetings of the Canadian Standards Association, Approvals Council (Electrical), and two of the Canadian Electrical Code (Part 1) Committee were attended in June at the City of Quebec and in October at Toronto. Opportunity was offered in June to inspect the laboratory facilities of the Canadian Gas Association and the Underwriters' Laboratories of Canada. The purpose was to give consideration to extended scope of these operations in so far as our requirements may demand.

A meeting of the Canadian Standards Association (Part III) Committee was attended in Montreal, which coincided with the June visit. This Committee is currently revising standards for overhead electric-line construction. When completed, it is hoped that this effort will be of immense value to the electric public utility operations both in British Columbia and the rest of Canada.

The eighth edition of the Canadian Electrical Code, Part I, with minor amendment and additions was adopted as current regulations under the *Electrical Energy Inspection Act* on July 23, 1963. In this connection we were able, with the assistance of the Provincial Fire Marshal's office and other interested parties, to prepare and have put into effect the first comprehensive set of fire-alarm electrical requirements in Canada. This will now recognize acceptable practices and bring about a satisfactory minimum standard for such systems.

The revised system inaugurated a year ago to set up improved facilities for examination of special non-C.S.A.-approved equipment has proved its worth. The number of applications received increased from 243 to 320, or approximately 33⅓ per cent. It is expected this volume will continue to increase as the demand for special electrical equipment increases.

The work of keeping electrical regulations generally up to date in connection with new techniques, practices, and new materials is continuing.

EXAMINATION OF MOTION-PICTURE PROJECTIONISTS

The Branch assisted the Provincial Fire Marshal in conducting six examinations for projectionists. The regulations covering such examinations provide that the Inspector of Electrical Energy be a member of this Examining Board in company with the Fire Marshal. In this connection, all fees arising from these examinations accrue to the credit of the Fire Marshal's department.

POLE LINE PERMITS

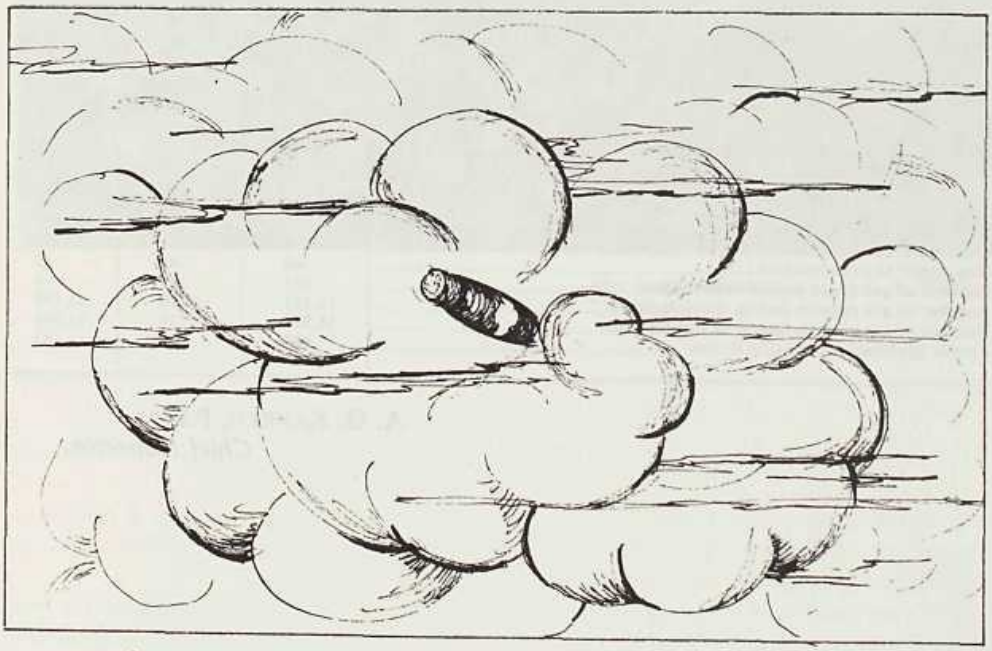
During the year the Branch checked 969 applications for the erection of pole-lines on Crown lands or Provincial highways. Recommendations on each application were forwarded to the Regional Engineer of the Department of Highways.

ACCIDENTS

There were 18 accidents recorded during the year, and eight of these were fatal.

May I again express my appreciation for your splendid co-operation and continued interest in our problems and to your Departmental staff for valuable assistance rendered during the year.

L. ROBSON, P.ENG.,
Chief Inspector of Electrical Energy.



"CAN'T UNDERSTAND THIS FUSS ABOUT VENTILATION!"

REPORT OF THE CHIEF GAS INSPECTOR

THE ACT

The Regulations Governing the Installation of Gas Piping, Appliances, and Venting were amended by Order in Council No. 1879, approved July 23, 1963.

THE BRANCH

The staff consists of the Chief Inspector, Assistant Chief Inspector, 17 Gas Inspectors, one Senior Clerk (office manager), one Clerk 2, two Clerks 1, one Clerk-Stenographer 3, one Clerk-Stenographer 2, plus one Clerk 1 in our Abbotsford office and one Clerk 2 (half time) in our Victoria office.

Night schools were conducted in Vancouver, Burnaby, Abbotsford, and Victoria in the past year. The rate that natural-gas units have been activated in the past year exceeded that of the year 1962/63, and all indications are that this rate will be exceeded again in the coming year. It is expected that 1964 will be an exceptionally busy year for this Branch.

A new gas utility started operation in the Province. It is the Fort Nelson Gas Company, which serves the Town of Fort Nelson.

During the year the Branch assumed the responsibility for the gas inspection services in the City of Penticton and the Town of Fort St. John. All utilities made extensions to their mains and services during the year.

ACCIDENTS

During the fiscal year there was one death in the City of Prince George attributed to burns suffered as a result of a natural-gas explosion.

SUMMARY OF WORK

	1963/64	1962/63	1961/62
New designs checked, industrial approval	834	765	547
Gas codes distributed	2,021	590	444
Gas-fitters' licences issued	1,661	1,514	1,490
Gas contractors' licences issued	516	566	543
Provisional licences issued	513	621	631
Gas-fitters' examinations	169	210	134
Gas-fitters' re-examinations	46	48	42
Number of gas-fitters passed examination	147	158	98
Number of gas permits issued, municipalities	10,153	11,296	12,159
Number of gas permits issued by this Division	14,558	13,534	11,584
Permit application pads distributed	688	680	480

A. G. KANEEN, P.ENG.,
Chief Inspector.

—Old Quaker Gentlemen, by J. C. S. Wilkinson.

REPORT OF THE CHIEF INSPECTOR OF BOILERS AND PRESSURE VESSELS

GENERAL

The steady growth of industry in the Province is reflected in our design office load, which is 8.7 per cent higher, while new boiler installations show an increase of 7.2 per cent over last year.

Dominant in the increase of our operations is the expansion programme in the pulp-mills. Each of the eight plants using the black-liquor recovery process have added or are installing an extra recovery boiler.

The advent of the high-rise apartments has brought about larger and more complex heating plants, which are all automatic.

The accelerated programme established in 1961 for the training of young men of Senior Matriculation calibre at Vancouver Vocational School continues to prove a success. All successful students are placed quickly in the larger plants.

Pressure-vessel welders are in demand. It is therefore most gratifying that our new vocational schools are so well equipped to train men in this category.

AMALGAMATION

The first step in this plan took place on November 1, 1963, when the Chief Inspector was appointed to the position of Chief Engineer, with the task of preparing for co-ordination of the three inspection branches—Boilers and Pressure Vessels, Electrical Energy, and Gas Inspection.

Structural changes were made in the offices to permit the office personnel of the Boilers and Pressure Vessels Branch and the Gas Inspection Branch to work jointly under a single office manager. New office procedures are gradually being introduced, and plans are being made for new accounting methods.

REGULATIONS

The work on the revised edition of Regulations Respecting Stationary Engineers is nearing completion. Also under way is a revision of fees, a Mechanical Refrigeration Code which embraces Canadian Standards B-52, and supplementary regulations on compressed gas (propane).

NEW CONSTRUCTION

During the year our workshops manufactured 24 steam boilers, 107 hot-water boilers, and 1,433 pressure vessels. Exported to other Provinces were 116 pressure vessels, destined for the oilfields and refineries in Alberta and Saskatchewan.

RECOVERY BOILER COMMITTEE

Since their introduction to the pulp industry about 15 years ago, it has been known that the black-liquor recovery boilers can be a hazard should the water in the boiler come in contact with the smelt bed.

Following the two recovery-boiler explosions of last year, a committee was formed consisting of the chief engineers of our eight recovery plants, with the Chief Inspector as chairman. The purpose of this committee was to establish the safest operating methods and a uniform shut-down drill for recovery boilers.

A liaison was established with the Black Liquor Recovery Boiler Advisory Committee in the United States, which is conducting extensive research into causes and prevention of explosions in recovery boilers.

After two meetings of our own committee at headquarters, subsequent meetings were held on plant job sites, thus providing evidence to plant personnel that efforts were being made to assist them in their operational problems. Every assistance has been rendered by the plant-owners in providing accommodation and information and the release of their steam-plant chiefs with respect to the meetings.

ACCIDENTS

Seven persons were killed and 12 injured in separate accidents to boilers and pressure equipment, as follows:—

August 18, 1963, at Woodfibre, B.C.—A furnace explosion from accummulated gases ruptured the water walls of black-liquor recovery boiler 51370-BC, spilling water on the smelt bed, which in turn exploded, causing the death of seven men. With the exception of the drums, the boiler was destroyed.

September 9, 1963, at Richmond, B.C.—A liquid-oxygen line ruptured when the oxygen came in contact with oil or grease. One man was injured.

September 30, 1963, at Steveston, B.C.—A water-tube boiler, 22793-BC, was overheated beyond repair due to low-water condition. The direct cause was negligence on the part of the engineer.

October 6, 1963, at Elk Falls, B.C.—A smelt-water explosion occurred in black-liquor recovery boiler 14493-BC. A ruptured water tube spilled water on the smelt bed. Four persons were injured. Except for the drums, the boiler has to be rebuilt.

November 15, 1963, at New Westminster, B.C.—An oxy-acetylene hose was cut on a sharp object. The gas ignited and heated an adjacent oxygen tank. In the resulting fire a welder suffered severe burns.

December 18, 1963, at Burnaby, B.C.—An automatic package-type boiler was badly damaged from a low-water condition due to defective controls.

Complete investigations were made of all these accidents, and full reports with recommendations are on file.

SUMMARY OF WORK

	1963/64	1962/63	1961/62
Designs registered	872	782	763
Boilers built under inspection	131	108	101
Pressure vessels built under inspection	1,433	1,291	1,287
Total boilers inspected	4,378	4,582	3,911
Total pressure vessels inspected	2,531	2,203	2,511
New boiler installations	443	389	264
Engineers examined	570	544	554
Welders examined	1,201	1,427	1,145

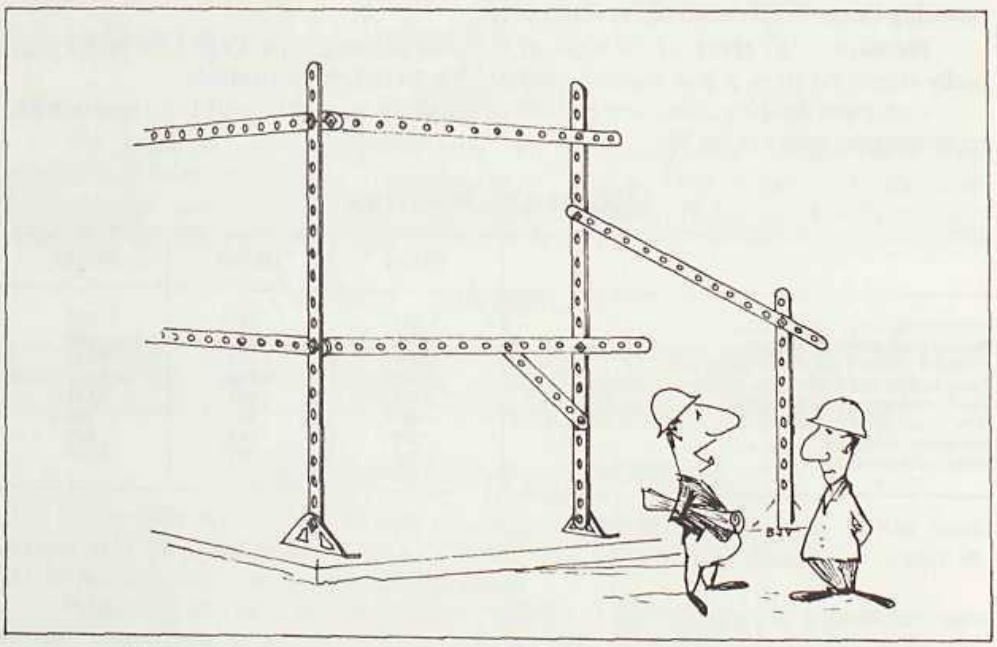
ENGINEERS' EXAMINATIONS

Class	Number Examined	Passed	Failed
First, A	25	10	15
First, B	11	7	4
Second	14	9	5
Third	115	84	31
Fourth	320	246	74
Boiler operator, A	27	24	3
Boiler operator, L.P.B.	50	47	3
Boiler operator, H.P.B.	8	6	2
Totals	570	433	137

WELDERS' TESTS

Grade	Number Examined	Passed	Failed
D.P.W. 1	229	209	20
D.P.W. 2	373	309	64
D.P.W. 3	52	48	4
D.P.W. 4	75	65	10
Downhill	54	50	4
Special (A.S.M.E.)	174	169	5
Provisional	244	229	15
Totals	1,201	1,079	122

D. DENHAM, P.ENG.,
Chief Inspector.



"...it was lowest bid... so what could we do !"

REPORT OF THE COMPTROLLER OF EXPENDITURE

The following pages present in detail the expenditures relating to the construction, alteration, and repairs on the various Government buildings and institutions, etc., coming under the management, charge, and direction of the Minister of Public Works.

A. E. RHODES,
Comptroller of Expenditure.

STATEMENT OF EXPENDITURES, FISCAL YEAR 1963/64

ADMINISTRATION AND MAINTENANCE VOTES

(For details *see* Public Accounts.)

Vote 294—Minister's Office	$20,954.19
Vote 295—General Administration	189,695.76
Vote 296—Government Buildings (Maintenance)	5,187,381.73
Vote 298—Rentals	589,752.57
Vote 299—Safety Inspection Division, Vancouver (includes Gas Inspection, Steam Boiler Inspection, and Electrical Energy Inspection Branches)	691,129.39
	$6,678,913.64
Less Credits	
Rentals and recoverable items, Government buildings, etc.	*154,384.05*
Repayable by commissions, boards, etc.—Rental Vote	*22,458.13*
	$6,502,071.46

CAPITAL

Vote 297—Construction of Provincial Buildings (*see* expenditure by building listed below)		$9,667,505.03
Less Parliament Buildings parking-lot fees		*19,131.00*
Less Federal Government contributions—		
Project No. 231-B-4—Nanaimo Vocational School	*$448,555.48*	
Project No. 401-B—Burnaby Institute of Technology	*2,622,240.65*	
Project No. 299-B—Burnaby Vocational School	*298,444.30*	
Project No. 412-B—Kelowna Vocational School	*1,032,282.83*	
Project No. 429-B—Nelson Vocational School	*1,000,565.79*	
Project No. 312-B—Prince George Vocational School	*87,915.83*	
Project No. 425-B—Vancouver Vocational School	*137,801.01*	
		5,627,805.89
		$4,020,568.14

SUMMARY

Net expenditure, Department of Public Works—	
Administration and maintenance	$6,502,071.46
Capital	4,020,568.14
	$10,522,639.60

VOTE 297—CONSTRUCTION OF PROVINCIAL BUILDINGS

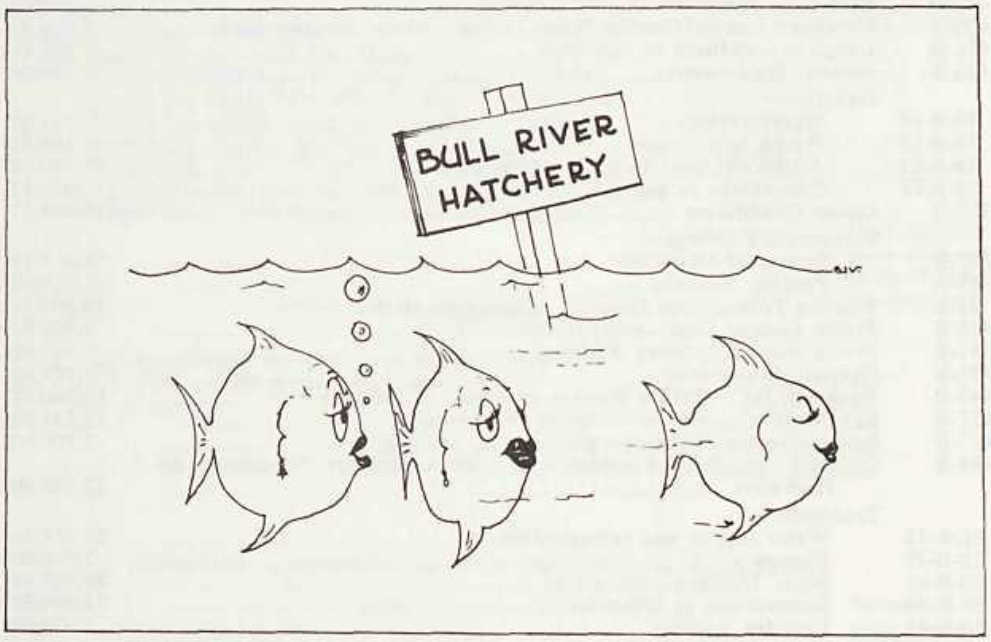
Project No.	Description	Expenditure
453-B	Allco Infirmary, Haney	$102,399.00
458-B	Abbotsford—Animal Pathology Building	93,937.13
461-B	Alberni—rewiring Government building	3,853.00
421-B	Bull River Fish Hatchery	144,487.85
	Colony Farm—	
6-B-29	Flood repairs	341.00
6-B-33	Power-line	23,619.23
6-B-34	Repairs to piggery	23,159.00
6-B-35	Bull-pens	10,000.00
462-B	Creston—rewiring Government building	6,913.00
25-B-8	Dellview Hospital, Vernon—fire-alarm system	7,684.25
25-B-11	Dellview Hospital, Vernon—replacement of linoleum	1,264.84
468-B	Duncan—purchase of property	65,250.00
	Essondale—	
5-B-2	Accounts Building—retaining-wall	4,200.00
5-B-41	Sewage-disposal system	1,200.00
5-B-102	Alterations and renovations to kitchen and staff changing-rooms	25,746.04
5-B-116	Landscaping, roads, parking, etc.	36,768.85

VOTE 297—CONSTRUCTION OF PROVINCIAL BUILDINGS—*Continued*

Project No.	Description	Expenditure
	Essondale—*Continued*	
5-B-117	Underground steam and condensate piping to North Lawn Building	$19,819.80
5-B-119	Garbage-handling and incinerator	26,924.89
5-B-120	Industrial Therapy Building	62,299.68
5-B-121	Structural alterations	50,000.00
5-B-123	Renovations to Valleyview Units 1, 2, and 3	308,371.71
5-B-129	Toilet facilities	4,200.00
5-B-130	Fire-stairs, Centre Lawn Building	80,046.87
5-B-131	Laundry equipment	11,375.82
5-B-132	Boiler-house, emergency electric power	8,732.60
5-B-350	Public Works Building	50,463.60
451-B	Fernie Courthouse—exterior restoration	2,219.25
469-B	Ganges—purchase of property for Government office	5,500.00
289-B	General expenses	256,867.39
467-B	Golden—residence for Government Agent	1,200.00
384-B	Various Government buildings—ground improvements	48,760.11
290-B-1	Government House—surface-water drains	861.85
123-B-5	Haney—development of grounds and irrigation system	4,118.31
399-B	Helmcken House—renovations	15,477.28
79-B-10	Jericho Hill School—dormitory unit and development	550,974.40
424-B	Kamloops Home for Aged—cemetery	3,000.00
430-B	Kamloops Central Heating Plant—boiler controls and duct work	16,000.00
416-B	Langford—addition to sign shop	305.87
426-B	Nelson Gaol—annex (Credit)	*1,000.00*
	Oakalla—	
39-B-18	Security fence	361.01
39-B-62	Prison farm roads	1,169.52
39-B-63	Additional gaol facilities (Westgate)	77,580.52
39-B-66	Conversion to gas	7,045.63
382-B	Oliver Courthouse	155,898.27
	Parliament Buildings—	
292-B	Structural alterations	58,913.10
385-B	Parking facilities	31,014.40
31-B-8	Pearson Tuberculosis Hospital—standby-by electric power	14,303.36
436-B	Prince George Gaol—security fence	4,408.33
381-B	Prince Rupert Forestry Building	7,487.00
455-B	Quesnel Courthouse	151,727.64
449-B	Rayleigh, B.C. (Prison Farm)—purchase of property	80,500.00
452-B	Revelstoke Courthouse—exterior restoration	13,741.00
447-B	Salmo–Creston Highway—purchase of building	2,100.00
448-B	Smithers—purchase of residence for District Engineer, Department of Highways	12,700.00
	Tranquille—	
10-B-12	Water supply and sewage disposal	22,354.26
10-B-40	Houses	5,000.00
10-B-41	Main Building—alterations	49,989.89
10-B-44	Renovations to boiler-house	71,166.38
10-B-48	Laundry cooling	5,924.60
	Vancouver area—	
408-B	Structural alterations	43,600.20
456-B	Additions to Agriculture Testing Laboratory	517.67
464-B	Victoria—purchase of property, Lee Avenue (for construction of mental hospital	204,900.00
	Woodlands School—	
7-B-40	Landscaping, fencing, and paving	21,674.39
7-B-46	Structural alterations	23,000.00
374-B	Education—Victoria University, Science Building (Credit)	*851.00*
	Vocational—	
401-B	Burnaby Institute of Technology	3,457,217.69
299-B	Burnaby Vocational School	96,359.00
299-B-2	Burnaby Vocational School—Public Works Building	5,136.43
412-B	Kelowna Vocational School	1,125,236.96
231-B-4	Nanaimo Vocational School	475,762.64
429-B	Nelson Vocational School	1,232,620.54
312-B	Prince George Vocational School	44,206.21

VOTE 297—CONSTRUCTION OF PROVINCIAL BUILDINGS—*Continued*

Project No.	Description	Expenditure
	Highways, garages, etc.—	
415-B	Albert Canyon—equipment-shed and oil-house (Revelstoke)	$6,674.64
413-B	Castlegar—equipment-shed and oil-house (Rossland-Trail)	28,523.22
463-B	Clayhurst—house for ferry operator (South Peace River)	13,500.00
379-B	Cloverdale Yard—oil-house (Delta)	8,000.00
380-B	Falkland—purchase of garage-site (Salmon Arm)	6,000.00
465-B	Grand Forks — addition to Highways garage (Grand Forks-Greenwood)	5,000.00
459-B	Hudson Hope—equipment-shed (North Peace River)	15,000.00
466-B	New Denver—addition to Highways garage (Kaslo-Slocan)	4,698.91
		$9,667,505.03



" HAVE YOU HEARD THE LATEST ABOUT HER.... ! "

TENDERS RECEIVED AND CONTRACTS AWARDED

Description of Work and Names of Tenderers	Amount	Remarks
Renovations to Underground Steam and Condensate Conduit to North Lawn Building, Essondale:		
The Bay Co. (B.C.), New Westminster	$24,769.00	
Fred Welsh & Son Ltd., Vancouver	18,863.00	Awarded.
Beaver Construction Co. Ltd., Vancouver	24,130.00	
Quadra Construction Co. Ltd.	24,694.00	
Thos. F. Hall Ltd., North Vancouver	20,400.00	
College of Education, University of British Columbia, Phase 2:		
Bennett & White Construction Co., Vancouver	1,866,913.00	
Beaver Construction Co. Ltd., Vancouver	1,906,969.00	
A. R. Grimwood Ltd.	1,815,000.00	
Bedford Construction Co. Ltd.	1,767,461.00	Awarded.
Biely Construction Co. Ltd.	1,886,028.00	
Smith Bros. & Wilson Ltd.	1,843,000.00	
John Laing & Son (Canada) Ltd.	1,979,765.00	
Electrical Rewiring of Boiler-house, Tranquille:		
Betts Electric & Refrigeration, Kamloops	16,938.00	Awarded.
Houle Electric Ltd., Vancouver	22,950.00	
Two Fire-stairs, Two Staircase Extensions, and Four Additional Basement Exits, Centre Lawn Building, Essondale:		
Alex Park & Son Ltd., Vancouver	93,758.00	
Hodgson, King & Marble	76,925.00	Awarded.
Hillside Building, Essondale:		
Manson Bros. Ltd., South Burnaby	309,758.00	
Beaver Construction Co., Ltd. Vancouver	324,413.00	
Hall Construction Ltd., North Vancouver	324,689.00	
E. H. Shockley & Son Ltd., Vancouver	327,168.00	
Smith Bros. & Wilson Ltd., Vancouver	327,000.00	
Brockbank & Hemingway Ltd., Vancouver	317,956.00	
International Construction Co., Ltd., New Westminster	319,997.00	
Grimwood Construction Co., Vancouver	301,941.00	
H. J. Heningson & Sons Ltd., Burnaby	336,000.00	
Dawson & Hall Ltd.	329,680.00	
Frank Stanzl Construction Ltd., Vancouver	327,536.00	
Renovations to Boiler Plant, Tranquille School, Tranquille, Phase 3:		
Barr & Anderson Ltd., Vancouver	13,900.00	
Fred Welsh & Son Ltd., Vancouver	12,605.00	Awarded.
Allco Infirmary, Haney:		
Ross-Crest Contractors, Burnaby	137,460.00	
International Construction Co., Ltd., New Westminster	133,476.00	
Beaver Construction Co. Ltd.	133,184.00	Awarded.
Brockbank & Hemingway Ltd., Vancouver	136,500.00	
E. H. Shockley & Son Ltd., Vancouver	136,092.00	
Alouette Construction Co. Ltd., Haney	149,444.00	
Frank Stanzl Construction Ltd., Vancouver	139,000.00	
Minty & McLean Ltd., Vancouver	136,877.00	
Erskine Construction Ltd., Haney	141,302.00	
Mainland Installations Ltd., Burnaby	142,083.00	
Irrigation, British Columbia Vocational School, Burnaby:		
Pacific Lawn Sprinklers Ltd., Vancouver	27,437.84	Awarded.
Terra Irrigation Ltd., Burnaby	24,368.00	
Landscaping, British Columbia Vocational School, Burnaby:		
Bert Murray Landscaping, Vancouver	39,985.00	
Conniston Construction Co. Ltd., Vancouver	36,110.00	
Jensen & Johnson Landscape Contractors Ltd., Vancouver	45,814.51	
Holland Landscapers Ltd., Vancouver	31,393.00	Awarded.
T. Moscone & Bros. Ltd., Vancouver	46,668.00	
Spra-Mac Landscaping Ltd., Vancouver	78,591.00	
Kootenay Trout Hatchery, Bull River:		
Burns & Dutton Construction (1962) Ltd., Vancouver	109,408.00	
A. G. Bayes Ltd., Penticton	117,999.00	
Interim Contracting Co. Ltd., Penticton	114,145.00	
Vancouver Pile Driving & Contracting Co. Ltd., North Vancouver	104,172.00	Awarded.
C. J. Oliver Ltd., Calgary	104,565.00	
Paving Parking-lots A, C. and F, Government Precinct, Victoria:		
Hub City Paving & Construction Ltd., Nanaimo	18,635.83	
Victoria Paving Co. Ltd., Victoria	16,288.02	Awarded.
Dawson Construction Ltd., Vancouver	24,573.41	

TENDERS RECEIVED AND CONTRACTS AWARDED—*Continued*

Description of Work and Names of Tenderers	Amount	Remarks
Provincial Building, Oliver:		
Bird Construction Co. Ltd.	$389,923.00	
C. J. Oliver Ltd., Vancouver	378,000.00	
Kenyon & Co. Ltd., Penticton	366,300.00	
Brockbank & Hemingway Ltd., Vancouver	357,000.00	Bid withdrawn.
E. H. Shockley & Son Ltd., Vancouver	358,218.00	Awarded.
Foundation and Basement, Provincial Government Building, Quesnel:		
Burns & Dutton Construction (1962) Ltd., Richmond	107,500.00	Awarded.
Vancouver Pile Driving & Contracting Co., North Vancouver	144,527.00	
Manson Bros. Ltd., Burnaby	112,544.00	
Narod Construction Ltd., Vancvouver	133,354.00	
Grading and Plant Material, British Columbia Vocational School, Nanaimo:		
Jensen & Johnsen Landscapers Ltd., Vancouver	29,686.00	Awarded.
A. & B. Construction Co. Ltd., Nanaimo	31,100.00	
Nanaimo Bulldozing Co. Ltd., Nanaimo	37,100.00	
Irrigation, British Columbia Vocational School, Nanaimo:		
Nanaimo Bulldozing Co. Ltd., Nanaimo	16,200.00	
A. & B. Construction Co. Ltd., Nanaimo	10,389.00	Awarded.
Terra Irrigation Ltd., Burnaby	11,462.00	
Pacific Lawn Sprinklers Ltd., Vancouver	12,344.82	
Grading and Plant Material, Cafeteria Building, British Columbia Institute of Technology, Burnaby:		
Holland Landscapers Ltd., Vancouver	8,538.00	Awarded.
Irrigation, Cafeteria Building, British Columbia Institute of Technology, Burnaby:		
Terra Irrigation Ltd., Burnaby	7,094.00	Awarded.
Pacific Lawn Sprinklers Ltd., Vancouver	7,380.43	
Land Preparation, British Columbia Vocational School, Kelowna:		
Jensen & Johnsen Landscapers Ltd., Vancouver	109,505.59	
Holland Landscapers Ltd., Vancouver	82,877.00	
J. W. Bedford Ltd. and Kelowna Nurseries Ltd., Kelowna	75,012.50	Awarded.
Irrigation, British Columbia Vocational School, Kelowna:		
Kenyon & Co. Ltd., Penticton	36,824.00	
Pacific Pipe & Flume Ltd., Penticton	23,012.10	Disqualified.
Mid Valley Construction Ltd., Kelowna	45,265.00	
Pacific Lawn Sprinklers Ltd., Vancouver	28,175.71	Awarded.
Animal Pathology Building, Abbotsford:		
Hall Construction Ltd.	559,258.00	
H. J. Henningson & Sons Ltd., Burnaby	595,908.00	
Bird Construction Co. Ltd., Kamloops	491,487.00	
E. H. Shockley & Son Ltd., Vancouver	478,392.00	
Western Building Ltd., Vancouver	493,670.00	
C. J. Oliver Ltd., Calgary	475,000.00	Awarded.
Narod Construction Co. Ltd., Vancouver	475,000.00	Awarded.
Norwood Construction Ltd., Burnaby	480,450.00	
A. W. Gillis Ltd., North Surrey	490,928.00	
Addition to R.C.M.P. Detachment, Hope:		
International Construction Co. Ltd.	37,355.00	
Walter Cabott Construction Ltd., New Westminster	34,380.00	
Canwest Construction Co. Ltd., Vancouver	41,583.00	
Mainland Installations Ltd., Burnaby	35,700.00	
Stevenson Construction Co. Ltd., Vancouver	32,200.00	
Royal City Construction Co. Ltd., New Westminster	40,543.00	
R. A. Adair Construction Ltd., Chilliwack	35,363.00	
Seaward Construction Co. Ltd., North Surrey	35,950.00	
Madig Construction Ltd., Vancouver	34,605.00	
T. W. P. Thompson Ltd., North Vancouver	42,539.00	
Conversion of Nos. 1 and 2 Boilers to Gas-Oil Firing, Oakalla Prison Farm, Burnaby:		
Industrial Process Heat Engineering Ltd., Vancouver	27,900.00	Awarded.
Lochhead-Haggerty Engineering & Manufacturing Co. Ltd., Burnaby	33,345.00	
Cal Van Engineering Ltd., Burnaby	29,374.00	
Classroom and Industrial Arts Building, Jericho Hill School, Vancouver:		
Geo. Born Construction Ltd., Burnaby	881,967.00	
Beaver Construction Co., Vancouver	867,550.00	
Biely Construction Ltd., Vancouver	914,815.00	
Narod Construction Ltd., Vancouver	858,232.00	
A. R. Grimwood Ltd., Vancouver	883,500.00	
Bennett & White Construction Co. Ltd., Burnaby	882,502.00	
Burns & Dutton Construction (1962) Ltd., Richmond	871,000.00	
E. H. Shockley & Sons Ltd., Vancouver	861,117.00	
John Laing & Son (Canada) Ltd., New Westminster	899,852.00	
Farmer Construction Ltd., Victoria	971,209.00	
Turnbull & Gale Construction Co., Vancouver	847,975.00	Awarded.

TENDERS RECEIVED AND CONTRACTS AWARDED—*Continued*

Description of Work and Names of Tenderers	Amount	Remarks
Highways Establishment, Creston:		
Poole Construction Co. Ltd., Calgary	$234,839.00	Awarded.
A. C. McEachern Ltd., Vancouver	294,457.00	
A. E. Jones Co. Ltd., Cranbrook	278,445.00	
C. J. Oliver Ltd., Calgary	237,750.00	
Creighton Construction Co. Ltd.	243,890.00	
Bird Construction Co. Ltd., Kamloops	236,203.00	
Dawson & Hall Ltd., Vancouver	263,263.00	
Kitchen and Dining-room Alterations, West Lawn Building, Essondale:		
Beaver Construction Co. Ltd., Vancouver	153,000.00	
Lickley Johnston Palmer Construction Ltd., Vancouver	147,827.00	Awarded.
Wilson Construction Co. Ltd., North Vancouver	158,844.00	
Kennett Construction Ltd., Vancouver	152,450.00	
Hall Construction Ltd., North Vancouver	148,500.00	
Addition to Sign-shop, Department of Highways, Langford:		
Newland Construction & Development Ltd., Vancouver	24,184.00	Awarded.
H. E. Fowler & Sons Ltd., Victoria	25,846.00	
M. Paine, Victoria	29,577.00	
Howe Construction Co. Ltd., North Burnaby	28,078.00	
Foundations, Structural Steelwork, and Roofing, Public Works Building, Burnaby:		
Royal City Construction Co. Ltd., New Westminster	67,485.00	
Stolberg Construction (1957) Ltd., Richmond	70,500.00	
C. J. Oliver Ltd., Vancouver	68,700.00	
Bennett & White Construction Co. Ltd.	75,621.00	
Westminster Boiler & Tank Co. Ltd., New Westminster	71,498.00	
Lickley Johnson Palmer Construction Ltd., Vancouver	67,847.00	
Cain Truscott Contractors Ltd., Burnaby	65,000.00	Awarded.
E. H. Shockley & Son Ltd., Vancouver	66,907.00	
Marpole Construction Co. Ltd., Vancouver	69,629.00	
Stevenson Construction Co. Ltd., Vancouver	66,281.00	
Beaver Construction Co. Ltd., Vancouver	72,000.00	
Hallcroft Construction Co., North Vancouver	68,300.00	
Dawson & Hall Ltd., Vancouver	67,958.00	
Moving of Department of Education Goods from Warehouse to British Columbia Institute of Technology, Burnaby:		
Bekins Moving & Storage Co. Ltd.	6,500.00	Awarded.
Additional Renovations to Existing Pole-line System, Essondale:		
J. H. McRae Co. Ltd., Vancouver	17,878.00	
Hume & Rumble Ltd., Vancouver	10,221.50	Awarded.
Trans Power Construction Ltd., Vancouver	14,825.00	
Western Electric Construction Co. Ltd., New Westminster	14,990.00	
K. Moore & Co. Ltd., Fort Langley	14,692.00	
Peterson Electrical Construction Co. Ltd., Vancouver	18,580.41	

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