

CARROLL LOUIS VILSON
MC 29 BOX 19, F. 859

Bechtel Corporation, 1970, 1979

OK

Room 26-167

October 31, 1970

Mr. D. Furlong, Manager
Scientific Development Department
Bechtel Corporation
50 Beale Street
San Francisco, California 94119

Dear Mr. Furlong:

I am sending you under separate cover a copy of the SCEP report. Additional copies are available through the M.I.T. Press at \$2.95 a copy.

I also hope that there will be some other occasion on which we will confer.

Sincerely,

Carroll L. Wilson

CLW:F

Bechtel Corporation

Engineers—Constructors

Fifty Beale Street
San Francisco, California 94119



October 27, 1970

Dr. Carroll L. Wilson
Jacobs Hill
Seekonk, Massachusetts 02771

Dear Dr. Wilson:

Thank you for your letter of October 7. We sincerely regret that your present commitments will not permit you to have a review role in our prospective Environmental Quality Organization. Perhaps at some future date we can develop another appropriate association which would require less of your time.

I was very interested in reading the findings and recommendations of SCEP which you enclosed in your letter and I would be most interested in receiving a copy of the final report when it is available.

Thank you again for your consideration and assistance to us.

Sincerely,

D. Furlong
Manager, Scientific
Development Department

DF:GAS:mc

Jacobs Hill
Seekonk, Massachusetts 02771
October 7, 1970

Mr. D. Furlong, Manager
Scientific Development Department
Bechtel Corporation
50 Beale Street
San Francisco, California 94119

Dear Mr. Furlong:

I have thought about the general proposition outlined in your letter of July 31st and concluded that my present commitments really don't allow me to assume the responsibilities envisaged. Nothing in your letter indicated the scale of these but I assume that there would be meetings of this Planning and Review Board every month or two in San Francisco and in view of my extensive follow-up obligations growing out of the SCEP project, most of which will lie on the east coast and in Europe, I do not feel that I should add to my commitments at this time.

Enclosed is the statement of the findings and recommendations of SCEP. The report in the form of a paperback book of three hundred fifty pages, published by the M.I.T. Press, will be out on October 15th and you may wish a copy for your review.

Thank you for your invitation and I regret the delay in replying to it. I have just now returned from a fortnight in Europe and Africa.

Sincerely,

Carroll L. Wilson

CLW:F

AUG 6 1970

Bechtel Corporation

Engineers—Constructors

Fifty Beale Street
San Francisco, California 94119



July 31, 1970

Dr. Carroll L. Wilson
Alfred P. Sloan School of Management
Massachusetts Institute of Technology
50 Memorial Drive
Cambridge, Massachusetts 02139

Dear Dr. Wilson:

Confirming our recent telephone conversation on the subject, I would like to invite you to join the Bechtel Corporation Environmental Planning and Review Board which we are in the process of organizing. As we discussed, the purpose of this Board is to advise Bechtel senior management on a broad range of environmental matters such as the course and direction of in-house funded development programs, the impact of government policies or the action of regulatory bodies and, on request, to consult on specific environmental problems related to major Bechtel projects.

For your information I am attaching a copy of our company brochure "Facts about Bechtel," a suggested listing of the functions of this Board, and a copy of our usual form of Consultant Agreement.

You were going to give some thought to the possibility of adding this assignment to your other commitments and I will look forward to hearing from you.

Sincerely yours,

D. Furlong
Manager, Scientific
Development Department

DF/jrs
Attachments

August 6, 1970

Mr. D. Furlong
Manager, Scientific
Development Department
Bechtel Corporation
50 Beale Street
San Francisco, California 94119

Dear Mr. Furlong:

Your letter of July 31 to Professor Carroll L. Wilson has been received.

Professor Wilson will be out of the country until early September. When he returns, your letter will be brought to his attention.

Sincerely,

Secretary

ITEM: Environmental Planning and Review Board

SPONSOR: Office of the President

PROGRAM

SUPERVISOR: Senior Environmental Quality Consultant

SCOPE OF
ACTIVITIES:

1. Review and advise on environmental control aspects of important Bechtel projects at various stages and to various levels as requested by Division and Senior Management. Selectively, this review would extend to the assessment of the total environmental impact of proposed projects and review of ameliorative measures with the clients involved.
2. Review Bechtel technical development programs and plans in environmental control and advise Division and Senior Management.

BACKGROUND:

The Environmental Planning and Review Board would consist of the Senior Environmental Quality Consultant, a senior representative from each division, and consultants. It is intended that the Board be comprised of well-known and respected professionals drawn from the engineering and scientific communities at large and from within Bechtel. Representation should include the appropriate disciplines of the environmental sciences such as hydrology, geology, meteorology, aquatic and terrestrial ecology; the behavioral sciences such as sociology and environmental engineering, including sanitary/civil engineering.

The services of the Board would be available to all Bechtel divisions worldwide and to senior management. Properly utilized, its reviews would serve both the company and its clients by assuring that responsibilities of environmental preservation are being effectively discharged and particularly would help prevent inadvertent or unknowing environmental degradation which could have deleterious public relations side effects.

The make-up and character of the Board would be flexible depending on the type and scope of the review required. A nucleus of about five to six consultants may be appropriate, most of whom consult routinely with the divisions at the present time.

AGREEMENT FOR CONSULTING SERVICES

This agreement entered into as of the _____ day of _____, between Bechtel Corporation (Bechtel) and _____ (Consultant).

1. Consultant agrees to perform for Bechtel the consulting services described in Section A of the annexed schedule. Such services shall be performed during the period mentioned in Section B of this schedule and at times and locations and in the general manner specified in the schedule.

2. For satisfactory performance of the services described herein Bechtel shall pay to Consultant the compensation provided for in Section C of the schedule.

This compensation shall be paid within ten days after Bechtel's receipt and approval of Consultant's statement of services and costs hereunder, prepared in such form and supported by such documents as Bechtel may reasonably require.

3. In performing services under this agreement Consultant shall operate as and have a status of an independent contractor and shall not act as or be an agent or employee of Bechtel. For this reason all of Consultant's activities will be at his own risk and Consultant shall not be entitled to Workmen's Compensation or similar benefits or other insurance protection provided by Bechtel; on the contrary, Consultant will make his own arrangements for payment of hospital and medical costs in connection with any injury or illness and other insurance coverages for the activities to be performed hereunder.

4. Bechtel shall have a permanent, assignable, nonexclusive, royalty-free license to use any concept, product or process, patentable or otherwise, furnished or supplied to Bechtel by Consultant, or otherwise developed by Consultant in the performance of this agreement. If requested by Bechtel, Consultant agrees to do all things necessary, at Bechtel's sole cost and expense, to obtain patents or copyrights on any processes, products or writings developed or produced by Consultant in the performance of this agreement, to the extent the same may be patented or copyrighted, and further agrees to execute such documents as may be necessary to implement and carry out the provisions of this paragraph. All materials prepared or developed by Consultant hereunder, including documents, calculations, maps, sketches, notes, reports, data, models and samples, shall become the property of Bechtel when prepared, whether delivered to Bechtel or not, and shall, together with any materials furnished Consultant by Bechtel hereunder, be delivered to Bechtel upon request and, in any event, upon termination of this agreement.

5. Consultant agrees that he will not divulge to third parties, without the written consent of Bechtel, any information obtained from or through Bechtel in connection with the performance of this agreement unless (a) the information is known to Consultant prior to obtaining same from Bechtel, (b) the information is, at the time of disclosure by Consultant, then in the public domain, or (c) the information is obtained by Consultant from a third party who did not receive same, directly or indirectly, from Bechtel. Consultant further agrees that he will not, without the prior written consent of Bechtel, disclose to any third party any information developed or obtained by Consultant in the performance of this agreement, except to the extent that said information falls within one of the categories described in (a), (b), or (c) above.

6. Unless otherwise agreed by Bechtel in writing, Consultant shall personally perform the services specified herein.

7. This agreement also includes the additional provisions, if any, as are specifically set forth in Section D of the attached schedule.

BECHTEL CORPORATION

By _____

By _____

SCHEDULE

Section A—Scope of Work

Section B—Period of Performance

This agreement shall be effective as of the date first set forth herein and shall continue through _____, unless terminated by Bechtel prior thereto by the giving of _____ days written notice of termination to Consultant.

Section C—Compensation

The sum of \$_____ for each day Consultant is engaged in performing the services described in Section A above.

Transportation, travel and other expenses incurred by Consultant in the performance of such services and authorized or approved by Bechtel in writing.

Section D—Additional Provisions

FACTS ABOUT



BECHTEL

FOREWORD

For seventy years Bechtel has been a builder for industry and government, and for many years a leading international engineer-constructor. The company provides every service necessary for the complete realization of projects, including economic and technical studies, master planning, engineering design, procurement, construction or management.

Bechtel's experience is deep and varied and it is staffed with specialists of many disciplines. Worldwide contacts and large capacity for work make the organization fully effective for client service, with close coordination of all activities under single responsibility and the direct control of the company's executive management.

Note: Illustrations show projects designed, constructed or managed by Bechtel. Some are the work of joint ventures.

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BOARD OF DIRECTORS



The Board of Directors, Bechtel Corporation: In the center are S. D. Bechtel, Jr., President (standing) and S. D. Bechtel, Senior Director (seated). From the left, seated: R. D. Grammater, Vice President; J. F. O'Connell, Executive Vice President; J. W. Komes, Executive Vice President; J. R. Kiely, Executive Vice President; K. K. Bechtel; R. L. Bridges; J. P. Yates. From the left, standing: E. Lipka, Vice President; E. J. Garbarini, Vice President; C. T. Draney, Vice President; W. S. Slusser, Vice President and Secretary; R. A. Bowman, Vice President; I. R. Caraco, Vice President; P. E. Thompson, Vice President.



Eighteen months from design to start-up for a 100,000 barrels-per-day refinery, Belgium. The project also included a marine terminal and pipeline.

BACKGROUND INFORMATION

Bechtel Corporation and its subsidiaries and affiliates grew from a family construction business established in 1898. The organization worked mainly in railroad and highway projects during its early years, increasing the scope and variety of projects until, by the 1930's, it was taking part in such construction milestones as Hoover Dam and the San Francisco-Oakland Bay Bridge.



Electric generating station, Florida, combines two conventional and two nuclear units to total 2.3 million kilowatts.

By 1940, the company had broadened its area of activities to include engineering and procurement in addition to construction.

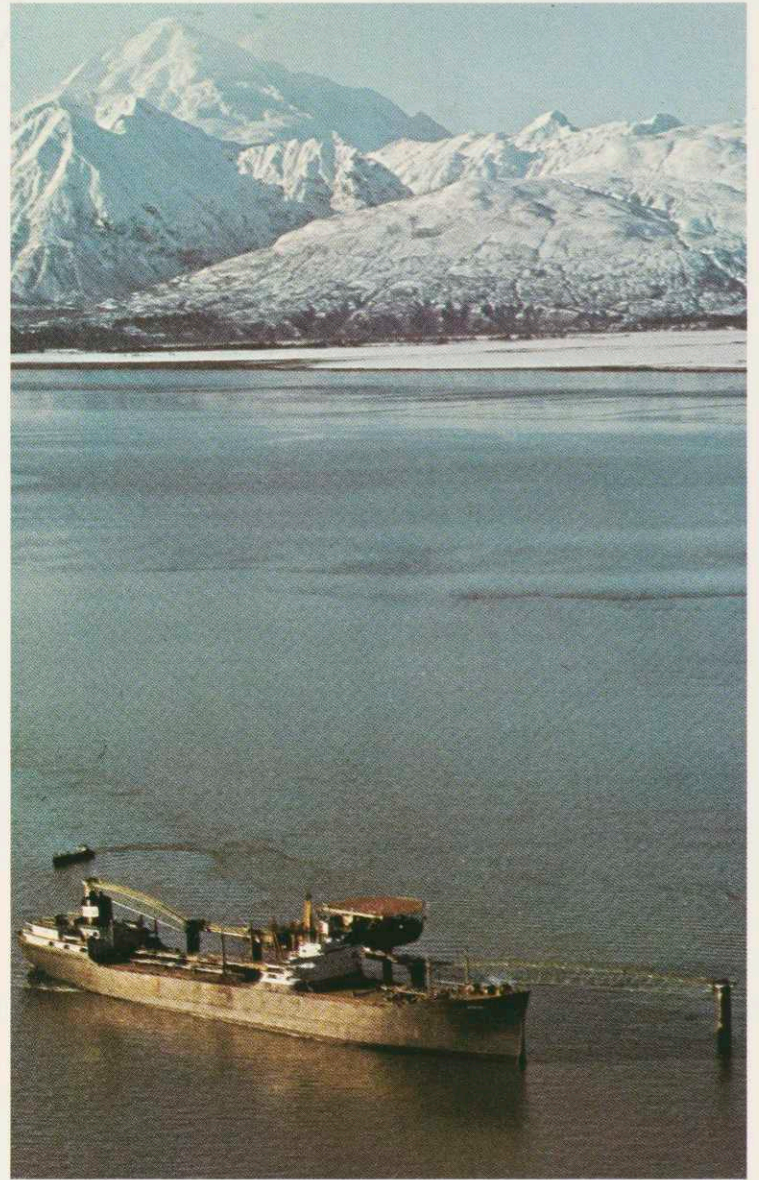
Responsibilities continued to expand during World War II, when projects of military and strategic importance included naval bases, oil pipelines, aviation fuel manufacturing facilities, shipyards and an aircraft modification center.

Indicative of its early concern with technological advancements, Bechtel pioneered the application of nuclear energy starting in 1949 with the construction of EBR-1, the first nuclear reactor from which useful electric power was produced. The company has been a major participant in the conception, evaluation, design, engineering and construction of many types of nuclear projects, including 21 generating plants.

Bechtel has enjoyed a steady increase in business volume, scope of services and geographical spread of activities. Headquarters are in San Francisco and major offices are maintained in various cities around the world. Activities are geared to basic industries and to work in the public sector.

Since 1939, a substantial amount of work has been performed outside the United States. Experience on major projects in 50 countries and on six continents is ample qualification for overseas projects.

Keeping pace with the growth of scientific knowledge in all its areas of interest, Bechtel meets the technological and schedule requirements of its clients in a rapidly advancing world.



Loading of crude oil the year around is made possible by this marine terminal, Cook Inlet, Alaska. After completing the conceptual study and detailed design, work was done with others in constructing the terminal and submarine lines.



Grinding mills of various types are selected to suit projects. Rod and ball mills of this iron beneficiation plant, Ontario, Canada, are an example.

FIELDS OF ACTIVITY

Services available include studies of all types, design, engineering, procurement, construction or management. Some of the principal fields covered:

- Petroleum Refineries
- Oil Field Development
- Gas Plants
- Pipelines—Oil, Gas, Slurry, Solids, Products, Water
- Chemical & Petrochemical Plants
- Fertilizer Plants
- Pulp & Paper Mills
- Food Processing, Glass Fiber, Cement & Other Industrial Plants
- Power Generation & Transmission Facilities
- Nuclear Power Stations—Nuclear Installations
- Hydroelectric & Water Resources Development
- Desalination Facilities
- Pollution Control
- Mining & Metallurgical Plant Projects
- Steel, Aluminum and Other Metals Producing Facilities
- Civil & Structural Engineering Works
- Marine Terminals, Port & Waterfront Developments
- Master Planning—Land, Airport, Urban & Industrial Park Development
- Rapid Transit & Transportation Systems
- Missile & Space Facilities

Responsibility for a project is given to one of eight operating divisions or a scientific department. Five divisions assume responsibilities for North American projects, the remaining three are international in scope.

The divisions are:

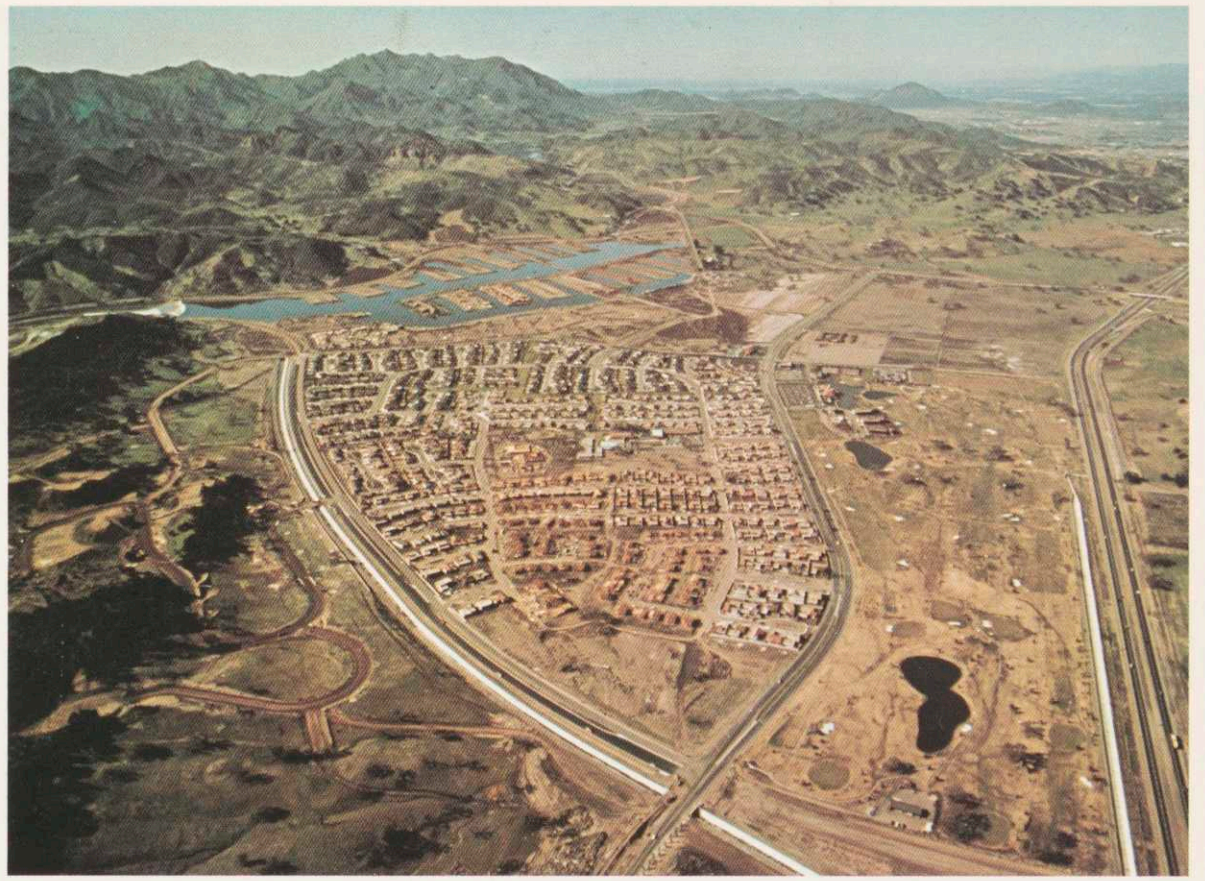
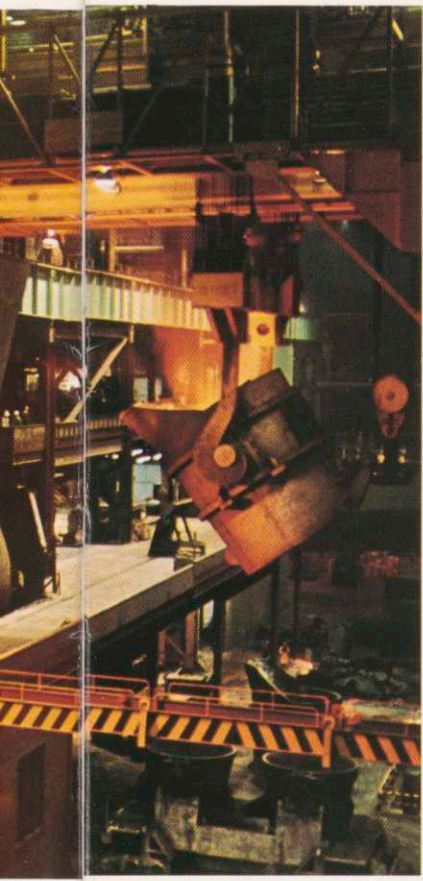
- Power & Industrial
- Hydro & Transportation
- Refinery & Chemical
- Mining & Metals
- Vernon (California)
- Pipeline
- International Power, Industrial & Metals
- International Petroleum & Chemical



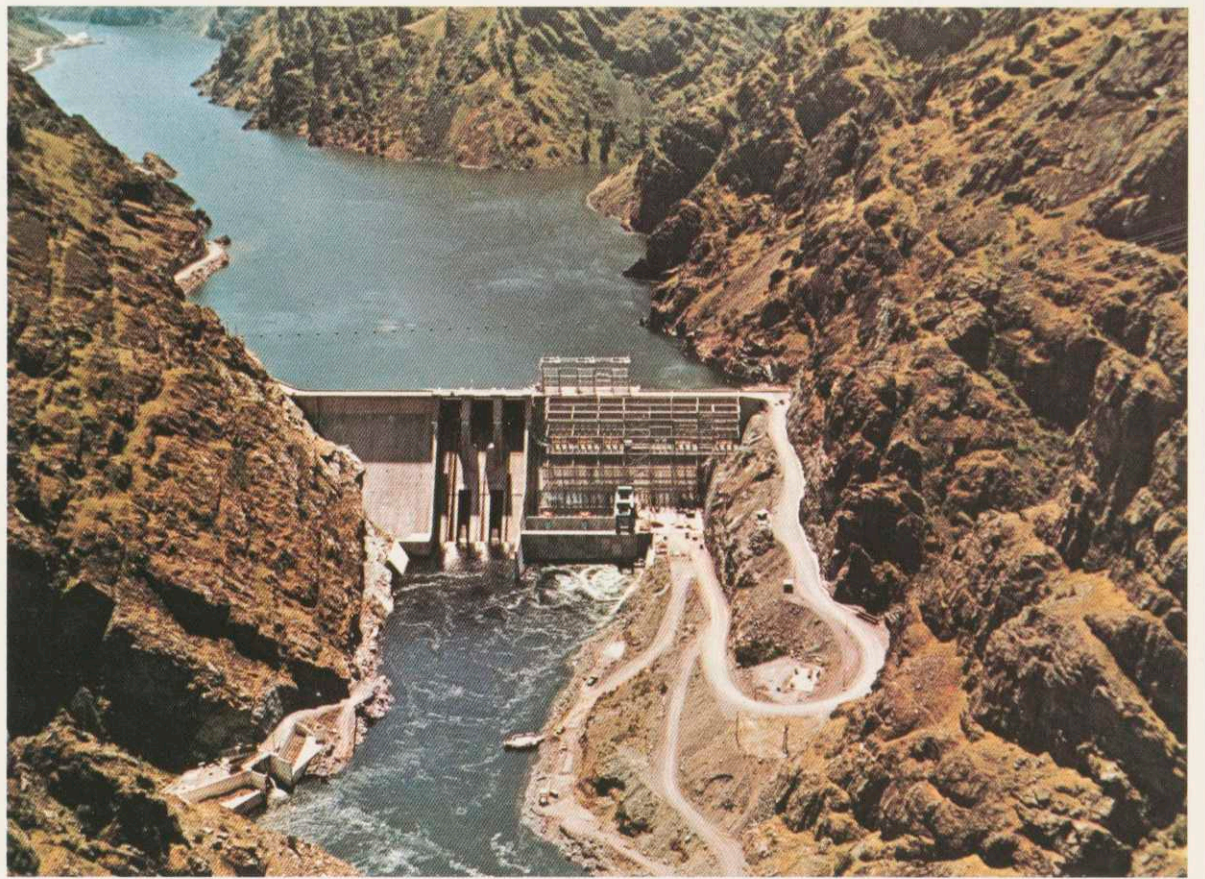
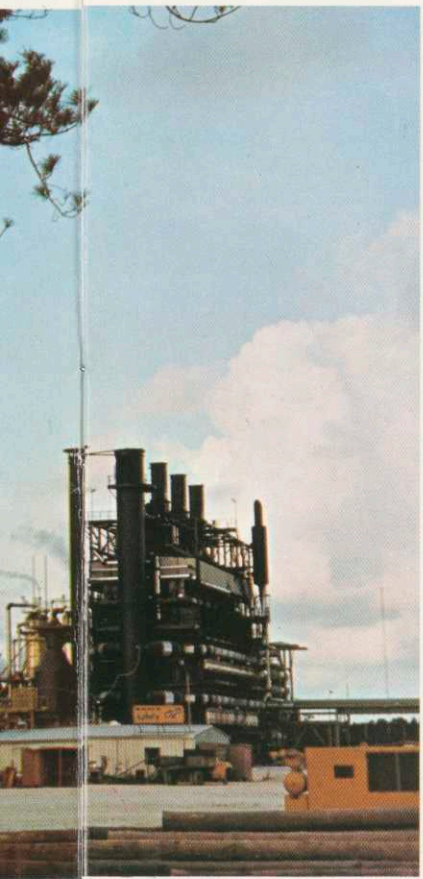
Many technological advances were combined to make the "Steel Mill of the Future" the first of its kind in the U.S., with construction by Bechtel.



The world's largest single-train ammonia plant, Pascagoula, Mississippi, is rated at 1,500 tons-per-day.



A "Park Neighborhood" forms one segment of a new planned community, Southern California, for which the company did the original master plan.



Dam and powerhouse, in rugged Hells Canyon on the Snake River between Idaho and Oregon, were designed by Bechtel following four years of extensive site exploration.



Grass-roots refinery, Louisiana, first produced 100,000 barrels-per-day and is being expanded.

ENGINEERING SERVICES

Complete engineering services are available. Technical staffs function within the various divisions. Services include:

- Evaluation and Preliminary Planning
 - Economic Analysis
 - Engineering Analysis
 - Feasibility Reports
 - Site Studies
 - Route Determination (pipelines, rapid transit or transportation)

- Preliminary Engineering
 - Master Planning
 - Process Studies
 - Time Schedules
 - Cost Estimates

- Processing Planning (when required)

- Plant Layout Services

- Final Detailed Engineering (as required for Procurement/Construction)
 - Construction Drawings
 - Scale Models
 - Specifications
 - Bills of Materials
 - Materials Requisitions
 - Start-up Manual
 - Operating-Maintenance Instructions

During the life of a project, our engineers remain in close contact with both client representatives and with Bechtel's own purchasing and construction departments. On completion, they are available to supervise or assist in project testing and start-up.

ENGINEERING FACILITIES—Engineering offices are located in San Francisco, Los Angeles, New York, Houston, Washington, D.C. Subsidiary engineering offices; in Montreal, London, Paris, The Hague and Melbourne.

Office layout allows for segregation of project engineering groups when desired, an arrangement particularly suited to projects on which secrecy agreements or security measures are in force.



Petroleum pipeline marine terminal in northern Italy simultaneously berths four tankers of up to 160,000 deadweight tons.



Copper plant expansion, northern Michigan, included responsibilities for surface support system for underground mine and plant additions in a multi-phase project.



Georgia pulp and paper mill had its annual production increased from 130,000 to 250,000 tons by an extensive expansion program.

SCHEDULING, ESTIMATING AND COST CONTROL

Cost estimating is provided as a service to supplement engineering and construction. An Estimating Department is maintained independently of the engineering and construction organizations. This group prepares cost estimates and budgets for procurement and construction.

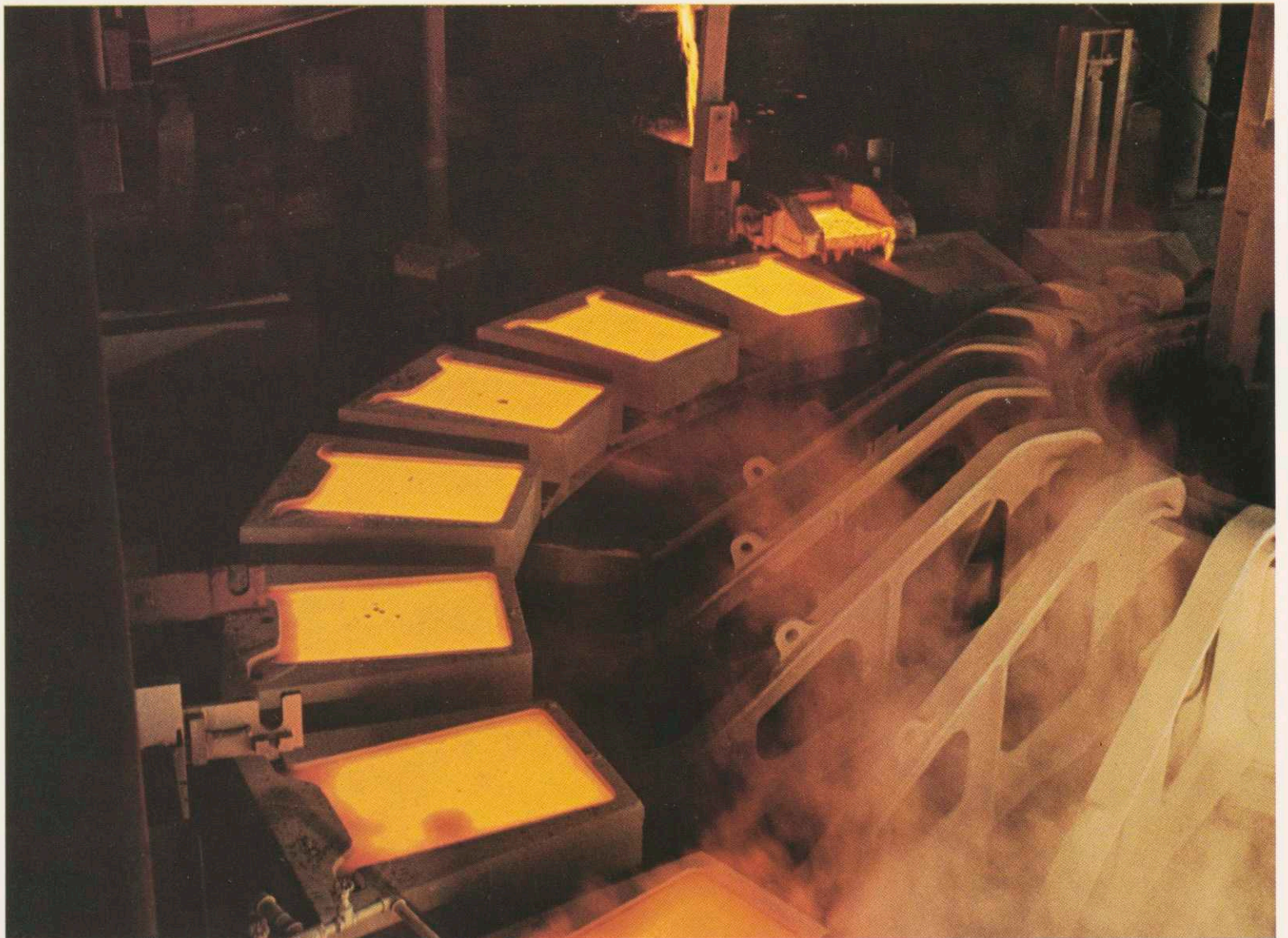
In addition, the department is responsible for cost control and the preparation of procurement and construction schedules.

PROCUREMENT OF MATERIALS

Bechtel procurement personnel, working from carefully prepared specifications, search the world's markets for the most favorable sources of materials, including fabricated equipment. Services include expediting and shop inspection. Close contacts are maintained with fabricators and vendors to assure deliveries in accordance with predetermined schedules.

Specialists experienced in international practices handle purchasing, inspection and expediting from key offices at strategic points around the world and from project locations. They solve purchasing, quality control and delivery problems faced in overseas markets.

The company's Washington, D. C. Executive Office assists in procurement matters requiring contact with Federal government agencies. In other parts of the world, trained and widely experienced specialists competently handle government clearances, customs and tariff regulations, special documents and shipping requirements.



Anode casting wheel in South African copper complex is typical of equipment procured worldwide for scheduled delivery to projects in remote locations.



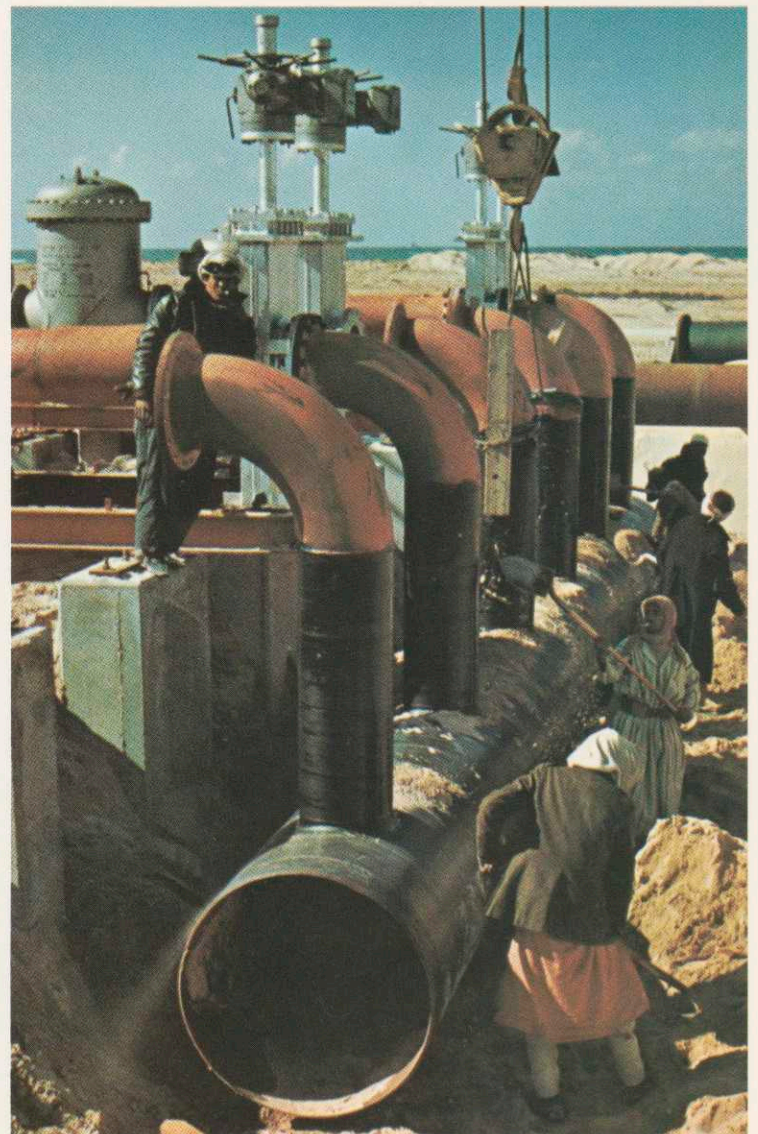
Food into



Oil sands project, Alberta, required procurement of equipment and materials for mining, extraction and oil processing plants, power station, and pipeline.



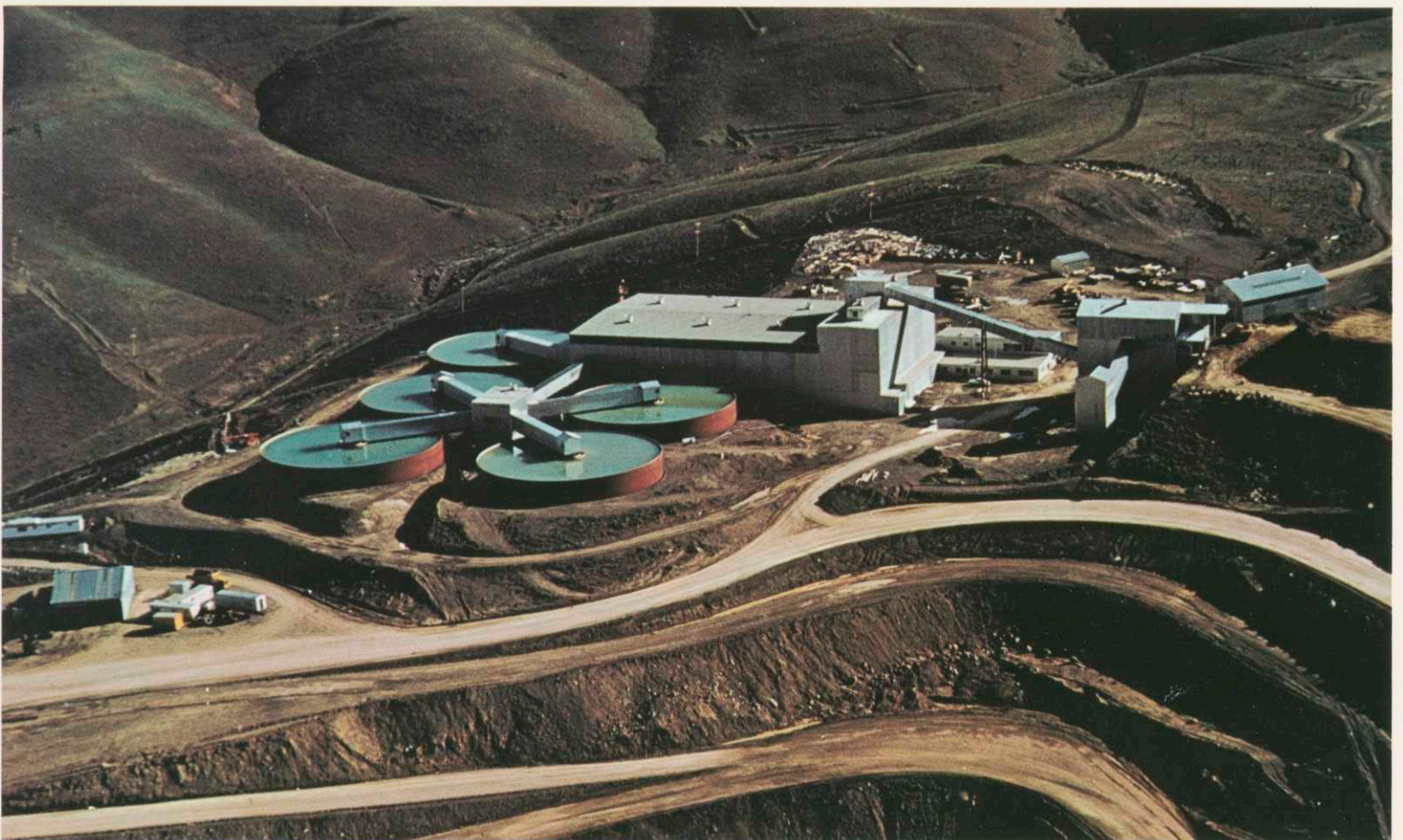
Food processing plant brought four existing plants, plus major expansions, into a single operation under the 20-acre roof.



Tight programming of deliveries keep fast-moving projects on schedule, such as this Libyan pipeline... eight months from survey to start-up.



Southern California steam electric generating station has six units with a total capability of 1.9 million kilowatts.



Gold cyanide plant, northeastern Nevada, first major U.S. gold development in a quarter-century, was producing in less than 11 months.

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CONSTRUCTION SERVICES



Bechtel's equipment performing a lift at a refinery project in Wales, helped complete the 100,000-barrels-per-day project in 20 months from groundbreaking.

Bechtel constructs for clients under either of two basic arrangements:

As part of an overall contract including responsibility for engineering design and furnishing of materials

As a separate assignment based upon engineering plans, specifications and materials supplied by the owner, by the contractor or partly by both.

The company provides a complete construction operation with all or a major portion of the work done by Bechtel. An indication of the construction organization's size and diversity is the fact that, for years, the number of projects under way simultaneously has ranged from 30 to 60, varying in size from \$100,000 to \$100,000,000 or more.

A factor which helps make it possible to serve a wide range of construction projects is the ability to shift supervisory personnel from place to place quickly to fully utilize their specialized backgrounds. Diversity of experience among individuals, among the operating groups and in the company is a further asset.

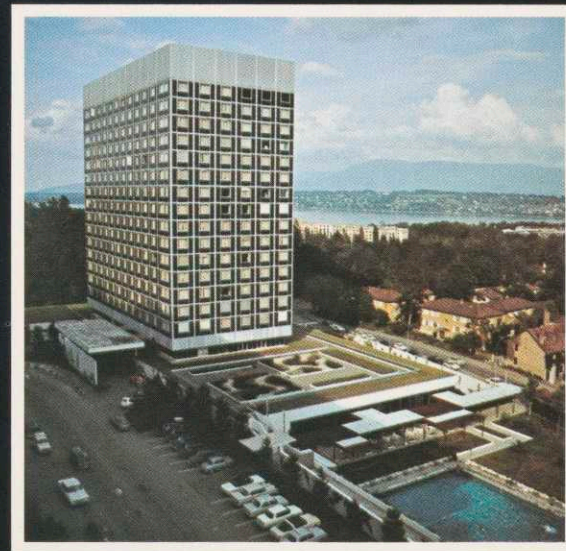
CONSTRUCTION EQUIPMENT—Bechtel owns a wide variety of machines and tools which are used to build projects, rented at rates competitive with or lower than rates in the equipment business. However, when a saving in the cost of work will result, locally rented equipment may be utilized. When this is done, all equipment must meet the company's high standards.



Company equipment is used on remote projects worldwide, such as this north African pipeline project.



Glass fiber plant, Belgium, reflects capabilities for design of complex operations, and procurement services in the world markets.



Luxury hotel, Geneva, Switzerland, is one of many for which the company has had total project management responsibilities.



Nuclear electric power project, near Bombay, for the Government of India . . . one of Bechtel's nuclear projects on three continents.

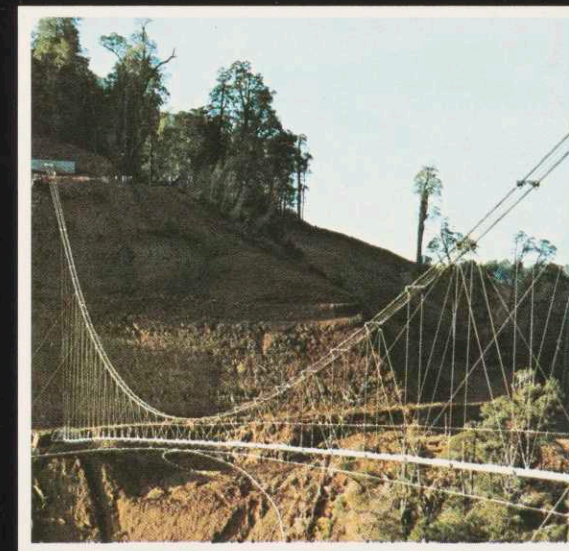
BECHTEL PROJECTS AROUND THE WORLD



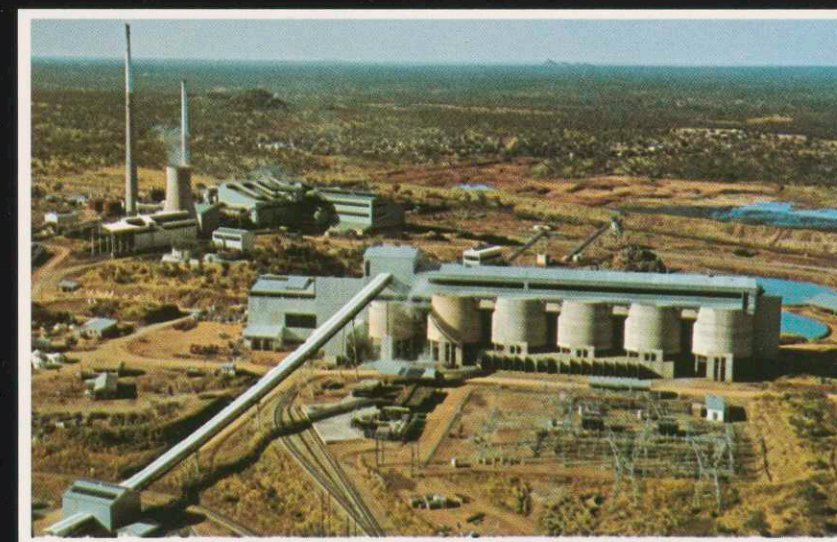
- ★ Home Office
- Permanent Offices (Division, Engineering, Business Development, Executive)
- Projects



Scandinavia's largest refinery, near Goteborg, Sweden, adds vitally needed energy to Europe's fuel market.



Iron ore slurry pipeline, 53 miles through rugged terrain in Tasmania, transports 2.25 million tons of iron ore concentrates annually.



Copper complex, South Africa, where a Bechtel-sponsored joint venture was responsible for the grass roots plant, its additions and expansions.

After pioneering the management concept, Bechtel broadened its activities in management until today the company offers:

- Engineering Management
- Construction Management
- Total Project Management

Acting as the owner's agent or representative, Bechtel:

- Assists in establishing basic project concepts
- Is responsible for performing the engineering
- Arranges, supervises and coordinates all phases of the project's execution.

As project-manager, the company:

- Performs all planning and administrative functions
- Establishes engineering and construction budgets and schedules
- Purchases, inspects and expedites materials and equipment
- Prepares designs, specifications and contracts
- Inspects all work
- Delivers the completed project.

With this arrangement the owner need not assemble a staff of engineering specialists, is able to approve all major decisions in advance and retains complete control of the project.

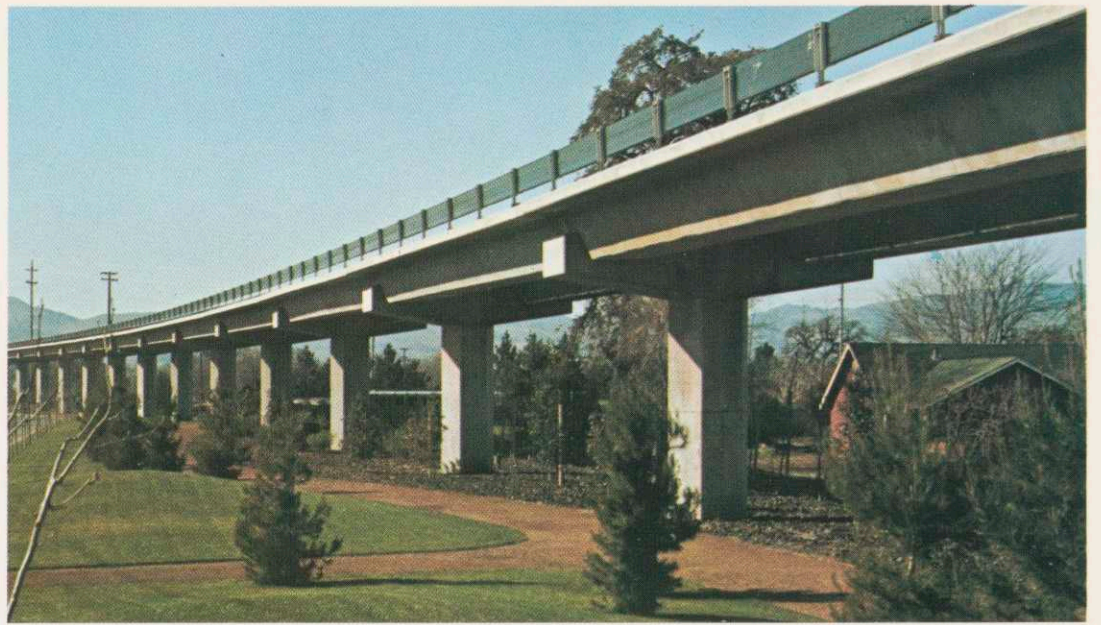
Work proceeds rapidly and economically with responsibility centered in a single, capable organization.

MANAGEMENT SERVICES



A 287-mile petroleum pipeline system from northern Italy through the Austrian Alps to West Germany includes marine terminal, tank farm and pumping stations.

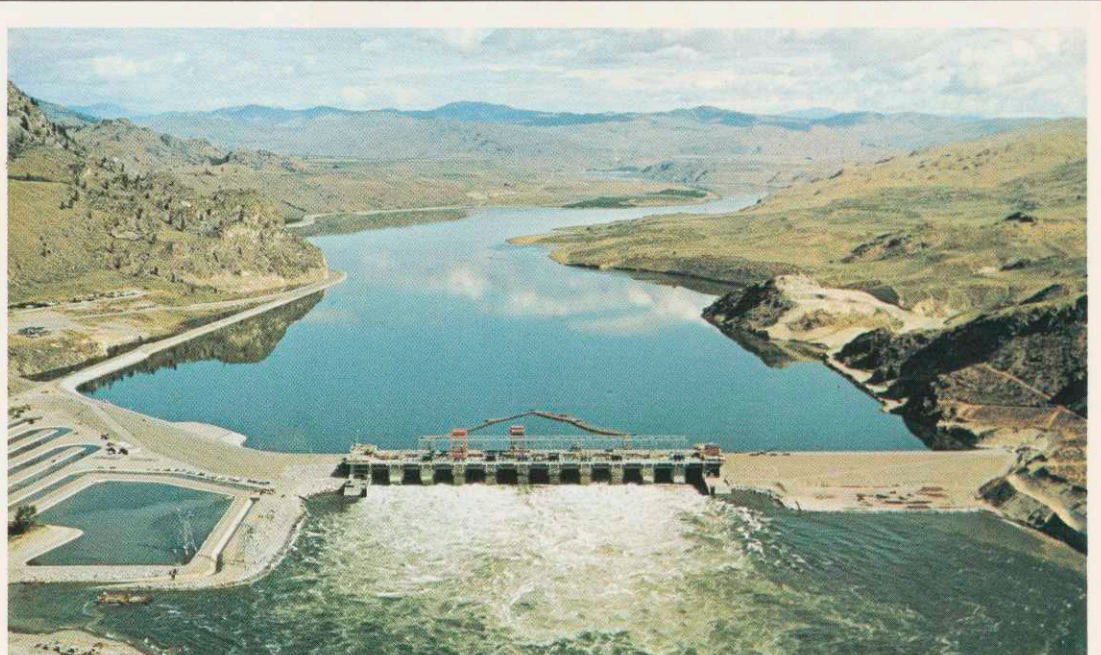
Section of aerial track, part of 75-mile rapid transit system in the San Francisco Bay Area, California, with engineering-construction management by a Bechtel-sponsored joint venture.

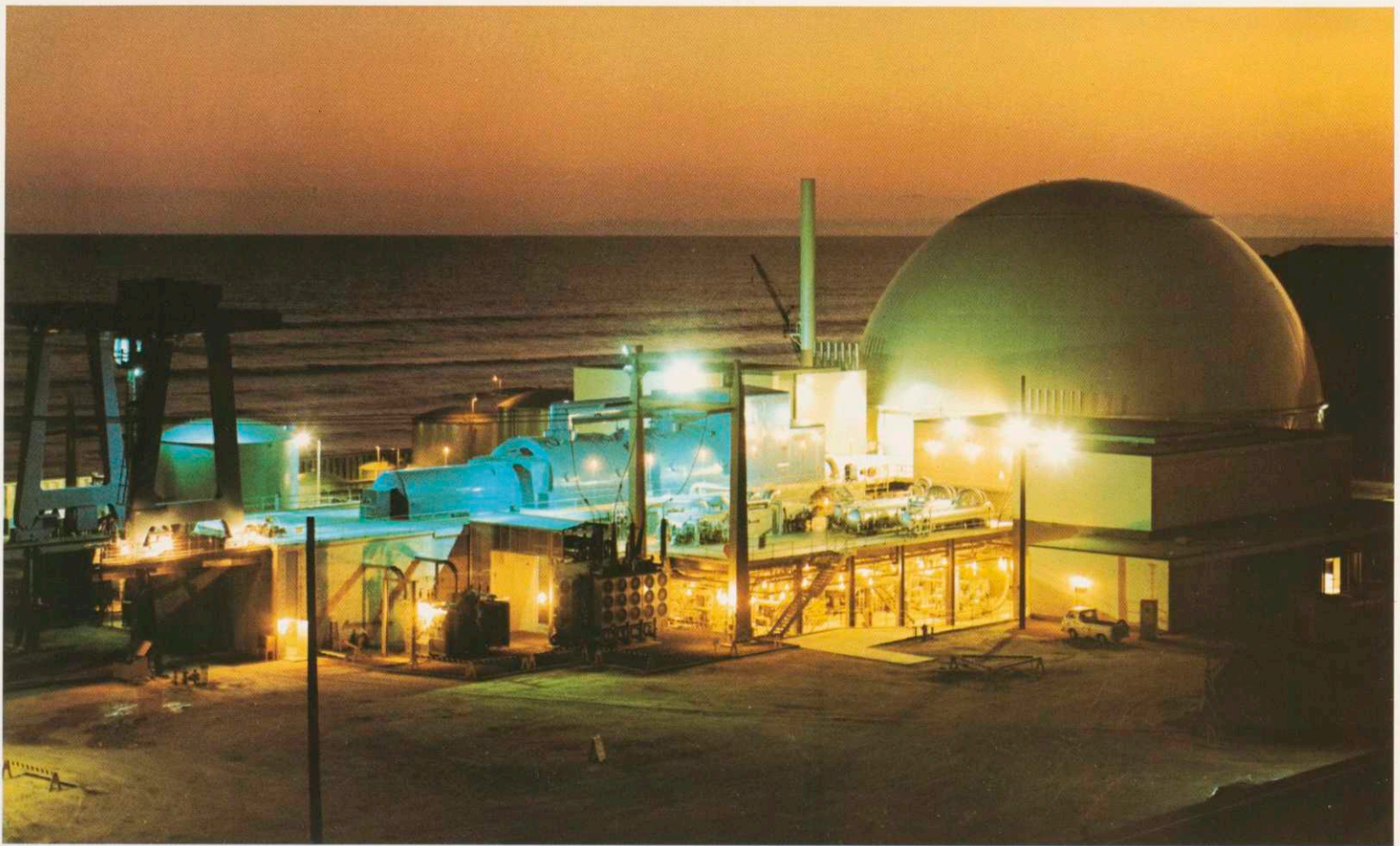


Pagoda style roof characterizes the picturesque Hotel Siam, Bangkok, one of a worldwide hotel chain for which the company has project management responsibilities.

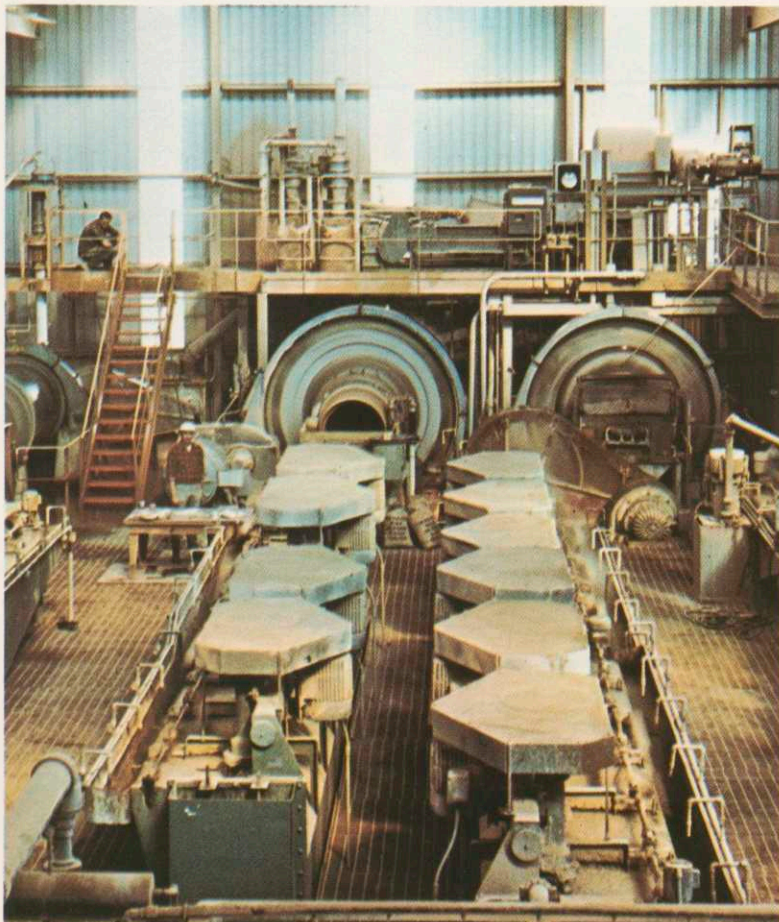


Hydrocombine dam on the Columbia River, Washington, is a Bechtel concept putting all major functions into one concrete structure.





Southern California nuclear power station produces 450,000 kilowatts, the largest single-purpose nuclear unit at time of operation.



Rare earths concentrates facility, California, provides raw material for making vitally needed europium oxide for the television industry.

SCIENTIFIC DEVELOPMENT SERVICES

When projects require exploratory, specialized or highly advanced techniques in engineering and construction, the scientific development services provide:

- Technical assistance in planning
- Studies and research
- Preliminary engineering.

Work is carried on by a staff of highly-trained specialists, organized into three major groups:

RESEARCH

- Microwave, Industrial Applications Laboratory.

DEVELOPMENT ENGINEERING

- Nuclear Power
- Nuclear Fuels Cycle
- Conventional Power
- Environmental Engineering
- Structural & Mechanical.

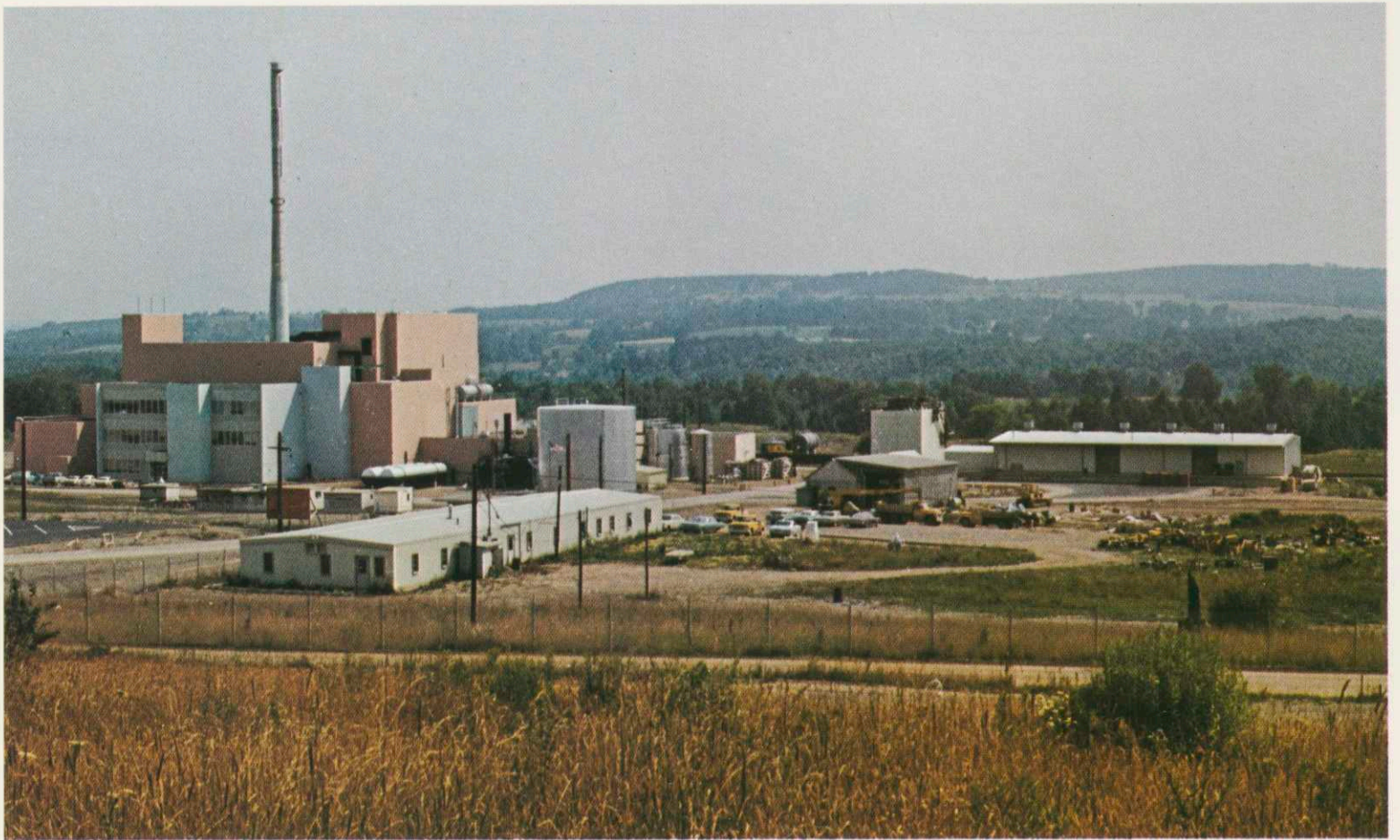
APPLIED ECONOMICS & SYSTEMS

- Regional Planning
- Systems Engineering
- Marketing & Economic Studies.

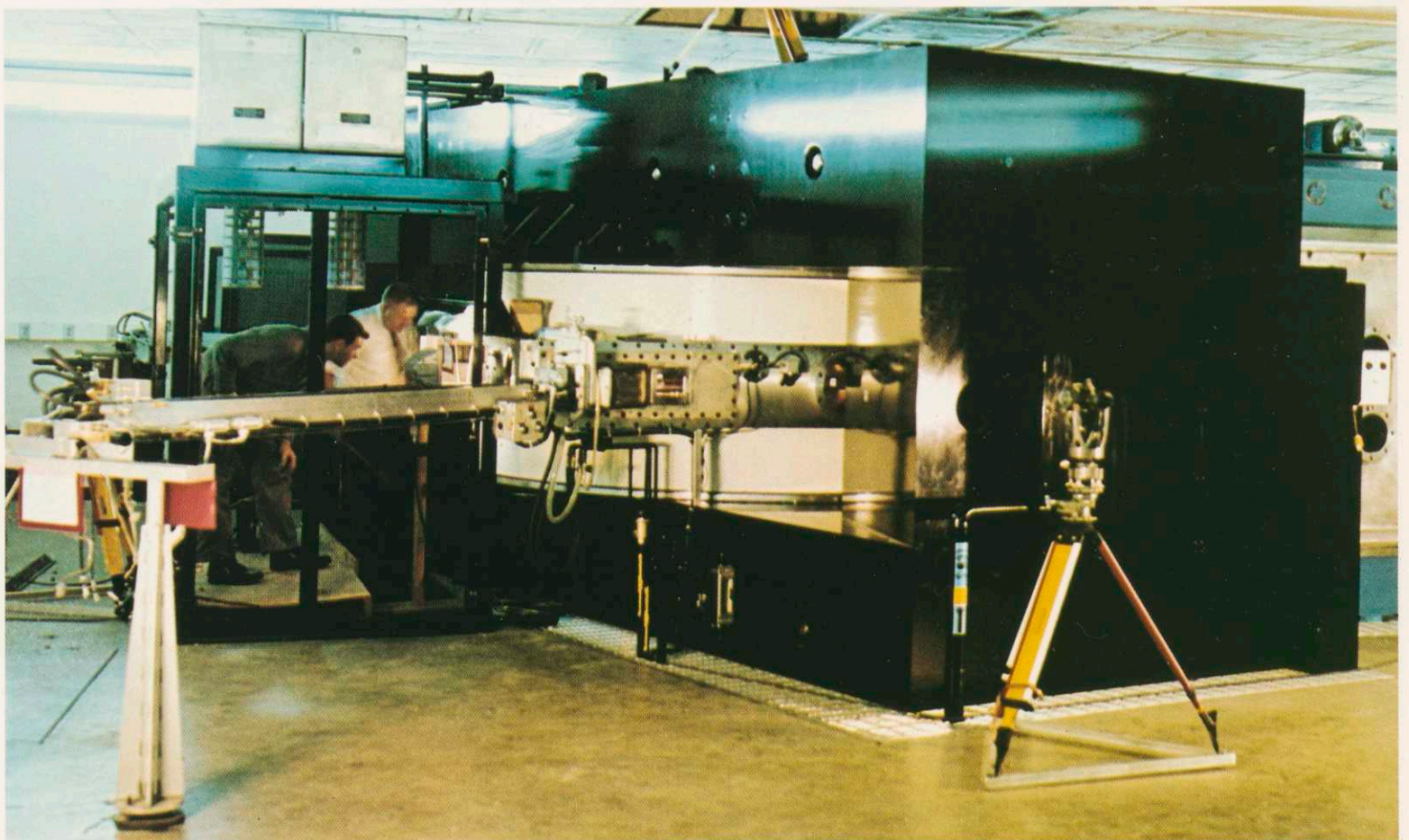
In addition to work on projects, groups develop new technological applications in allied fields and conduct research and development for clients in fields as varied as the needs of industry and people.

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Nuclear spent fuel processing plant in New York is the first privately owned facility of its type in the world.

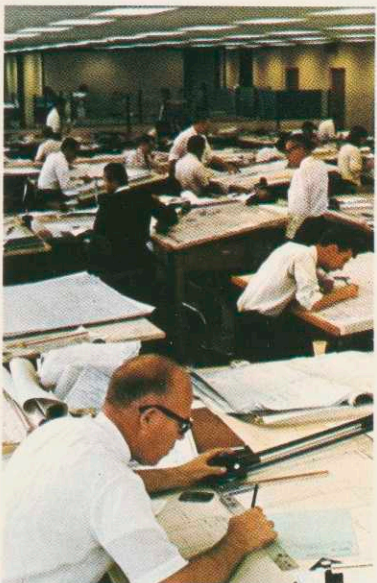


Design-engineering, procurement, construction and testing services of this cyclotron at a Texas university, reflect advanced technological capabilities.



Expert model makers work closely with design engineers as they design a refinery project.

MANPOWER SERVICES



Drafting of the many parts of a complex project require highly trained personnel.

EMPLOYEE RELATIONS—Company executives refer to the organization's people as its "most valuable asset." This feeling is reflected in the care of selection of employees and the benefits available to them.

Excluding manual workers, the permanent organization consists of more than 12,000 employees.

- More than half are in the engineering classifications;
- of these, more than 80 per cent are college graduates;
- one in nine holds one or more advanced degrees.

Most company officers are professional engineers. They use their expertise and experience in contributing to the solution of major engineering problems as well as to policy determination and management operations.

The large force of technically skilled men is coupled with flexibility of organization and worldwide experience to enable Bechtel to move into new areas and carry out difficult assignments promptly and efficiently.

RECRUITMENT—Standards of selection and control over hiring of monthly-salaried employees is maintained by the Employee Relations Department. Qualifications of candidates for major technical positions are reviewed by management.

Recruitment is worldwide. In many countries, large numbers of local workers are employed and trained. On-job training programs are stressed, particularly in areas where skilled workers are in short supply.

LABOR RELATIONS—A fully-staffed Labor Relations Department contacts project offices on an almost daily basis. This close coordination of labor policy promotes excellent relations between labor and management. In the United States and Canada, working agreements of national scope are maintained with the building trades unions. Clear-cut local agreements are prepared and agreed upon prior to the commencement of each project.

SAFETY—Constant emphasis is given to safe working practices. Accident prevention programs are established at project sites, each requiring safety meetings held at regular intervals by superintendents and foremen. Unsafe working conditions are avoided by anticipating action. Accident records are analyzed and reviewed with construction supervisors to prevent recurrences.



Grass-roots work camp and townsite, Labrador, with 20-man bunkhouses, mess and recreation halls, family trailers and auxiliary facilities.



Engineers continue work in the field as a major project takes shape.

FORMS OF CONTRACTS

Contracting policies allow ample flexibility in the selection of a specific type of agreement to accommodate the client's preference, the nature and extent of services required, and other factors of a given project such as locations, time of performance, extent to which the work may be defined at the outset, and conditions affecting the availability of labor and materials.

PRINCIPAL SUBSIDIARIES AND AFFILIATES



Arabian Bechtel Corporation
Bechtel Associates
Bechtel and Company
Bechtel España S.A.
Bechtel France S.A. — Operations in France
Bechtel Gesellschaft m.b.H.
Bechtel (Deutschland) GmbH—Operations in West Germany
Bechtel Incorporated
Bechtel India Limited
Bechtel International Corporation
Bechtel International Limited—Operations in United Kingdom
Bechtel Italia, S.p.A.
Bechtel de Mexico, S.A. de C.V.
Bechtel Overseas Corporation—Management and
administration services for overseas affiliates
Bechtel Pacific Corporation Limited—Operations in Australia,
New Zealand
Canadian Bechtel Limited—Operations in Canada
Caribbean Bechtel Limited
Compañía Bechtel, S.A.
Compañía Bechtel, Internacional, S.A.
Eastern Bechtel Corporation
International Bechtel Builders, Inc.
Iran Bechtel Corporation
Mediterranean Bechtel Company, Inc.
Pacific Bechtel Corporation

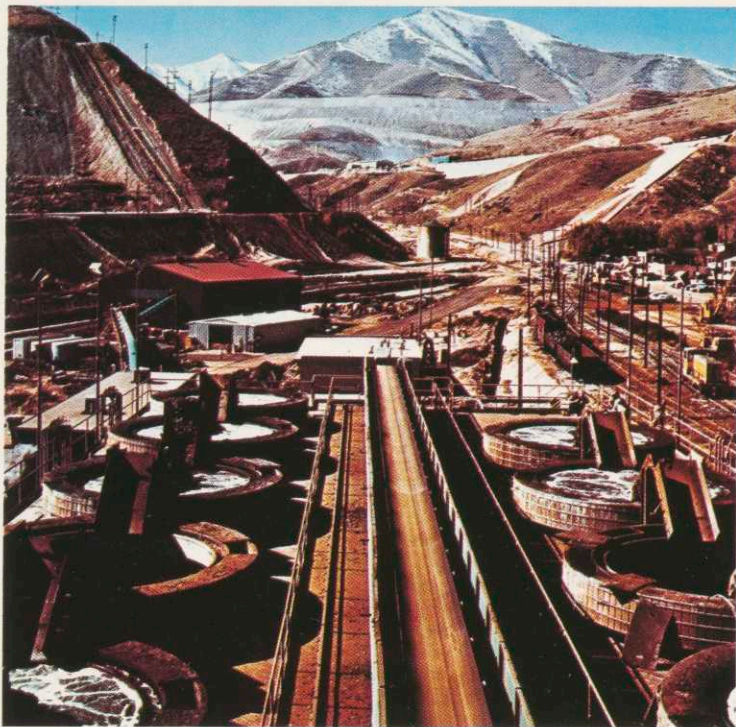
A representative worldwide listing of clients currently or recently served.

LIST OF CLIENTS

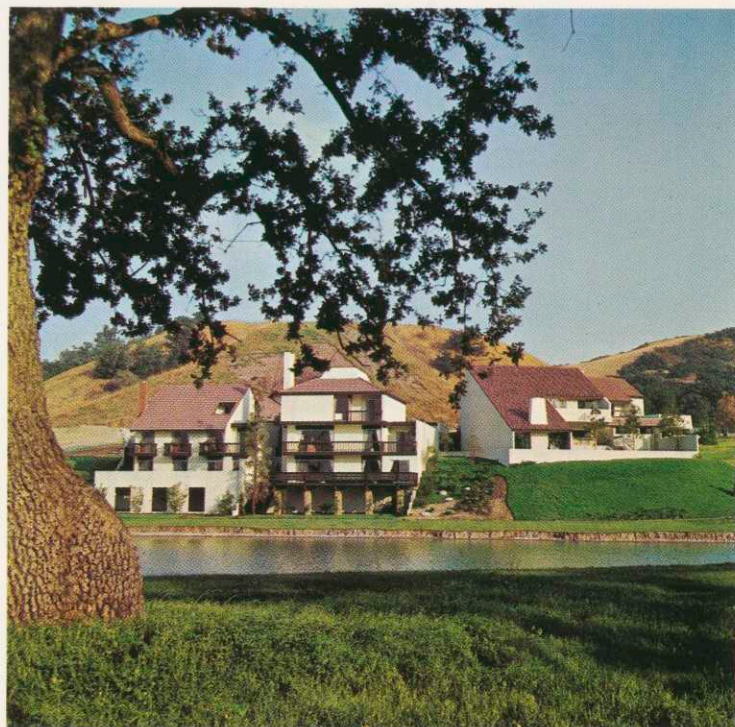
The Alberta Gas Trunk Line Company Limited
Alberta Natural Gas Company
Alberta Phoenix Tube & Pipe Limited
The Algoma Steel Corporation Limited
Allied Chemical Corporation
American Cement Company
American Cyanamid Company
American-Hawaiian Steamship Company
American Metal Climax, Inc.
American Potash & Chemical Corporation
American Smelting and Refining Company
American Sugar Refining Company
Ampol Refineries Limited
Anglo American International (U. K.) Limited
Arabian American Oil Company
Arizona Public Service Company
Arkansas Power and Light Company
Asbestos Corporation Limited
Atlantic City Electric Company
Atlantic Sugar Refineries Limited
Atomic Energy of Canada, Ltd.
Avisun Corporation
Baltimore Gas and Electric Company
Bataafse Internationale Petroleum Maatschappij N. V.
Bay Area Rapid Transit District
Bethlehem Steel Corporation
Boeing Company
Boston Edison Company
Bristol Laboratories, Inc.
British American Oil Company, Limited
British Newfoundland Company
The British Petroleum Company Limited
C. A. Electricidad de Caracas
Caland Ore Company Limited
California State Department of Water Resources
Camrose Tubes Limited
Canadian General Electric Company Limited
Canadian Industries Limited
Canadian Petrofina, Ltd.
Carnation Company
Chevron Chemical Company
City and County of San Francisco, California
The Cleveland-Cliffs Iron Company
Comisión Federal de Electricidad de la Republica Mexicana
Commonwealth Edison Company
Compagnie Francaise de Raffinage
Compagnie de Raffinage Shell Berre
Compagnie des Transports par Pipe-Lines au Sahara
Consumers Power Company
Continental Can Company, Inc.
Continental Carbon Company
Continental Oil Company
Conzinc Riotinto of Australia Limited
Copper Range Company
Delaware Power & Light Company
Department of Lighting, Seattle, Washington
Detroit Edison Company
Deutsche Transalpine Oelleitung G.m.b.H.
Dominion Foundries and Steel, Limited
Dominion Steel & Coal Co., Limited
Douglas County Public Utility District No. 1
The Dow Chemical Company
Dow Chemical International A. G.
Duke Power Company
East Bay Municipal Utility District, California
Esso Research & Engineering Company
Esso Standard (Libya) Inc.
Fertilizantes Fosfatados Mexicanos S. A. de C. V.
Fibreboard Paper Products Corporation
The Firestone Tire & Rubber Company
Florida Power & Light Company
FMC Corporation
Geigy Chemical Corporation
General Electric Company
General Foods Corporation
Great Canadian Oil Sands, Ltd.
Gulf Oil Corporation
Gulf Oil Refining Limited
The Hanna Mining Company
State of Hawaii, Department of Transportation
Hawaiian Commercial & Sugar Company, Ltd.
The Hawaiian Electric Company, Inc.
Hercules Powder Company
Hilo Electric Light Company, Ltd.
Howmet Corporation
Humble Oil & Refining Company
Husky Oil Company
Idaho Power Company
Imperial Chemical Industries Limited
Imperial Oil Enterprises, Ltd.
Indian Oil Corp. Ltd.
Inland Steel Company
Intalco Aluminum Corporation
Intercontinental Hotels Corporation
International General Electric Company
The International Nickel Company, Inc.
Interprovincial Pipeline Company
Iran Pan American Oil Company
Irish Base Metals Limited
Iron Ore Company of Canada Limited
Jones & Laughlin Steel Corporation
Kansas Power and Light Company
Kennecott Copper Corporation
Kerr-McGee Corporation
Kuwait Oil Company Limited
Laporte Industries Limited
Lehigh Portland Cement Company
Lever Brothers Company
Lone Star Cement Corporation
Lucky Lager Brewing Co.

Marathon Chemische Werke Bayern G.m.b.H.
Marathon Oil Company
Maui Electric Company, Ltd.
McDonnell Douglas Corporation
Merck and Company
Metropolitan Sanitary District of Greater Chicago
Metropolitan Water District of Southern California
Mississippi Power and Light Company
Mobil Oil Corporation
Mobil Oil Libya Limited
Molybdenum Corporation of America
Monsanto Company
Montana Power Company
Mt. Newman Mining Company Pty. Ltd.
National Aeronautics and Space Administration
National Bulk Carriers, Inc.
National Distillers and Chemical Corporation
National Steel Corporation
Natural Gas Pipelines Authority of South Australia
Nederlandse Gasunie N. V.
N. V. Nederlandse Staatsmijnen
New Brunswick Development Corporation
Newmont Mining Company
New York State Electric & Gas Corporation
Ministry of Works, Government of New Zealand
The New Zealand Refining Company Limited
Norris Industries, Inc.
North American Rockwell Corporation
Northeast Utilities
Northgate Exploration Limited
Northern Natural Gas Company
Nuclear Fuel Services, Inc.
Oasis Oil Company of Libya, Inc.
Occidental Petroleum Corporation
Olin Mathieson Chemical Corporation
Orange and Rockland Utilities, Inc.
Otter Tail Power Company
Owens-Corning Fiberglas Corporation
Pacific Gas and Electric Company
Pacific Gas Transmission Company
Pacific Power & Light Company
Pacific Western Industries, Inc.
Page-Hersey Tubes Limited
Palabora Mining Company Limited
Pechiney Enterprises Incorporated
Pennsylvania Electric Company
Petroleum Refineries (Australia) Pty., Ltd.
Petro-Tex Chemical Corporation
Philadelphia Electric Company
Phillips Petroleum
Pickands Mather & Co.
Pickands Mather & Co. International
Portland General Electric Company
Potomac Electric Power Company
Procter & Gamble Company
Puget Sound Power & Light Company
Ranchers Exploration and Development Corporation

Regent Refining Company, Ltd.
Reynolds Metals Company
Rhein-Donau Oelleitung G.m.b.H.
Rhone-Alpes
Rio Algom Mines Limited
The Rio Tinto Zinc Corporation Limited
Rochester Gas and Electric Corporation
N. V. Rotterdam - Rijn Pijpleiding Maatschappij
Sacramento Municipal Utility District
Salt River Power District
San Diego Gas & Electric Company
Savannah River Nuclear Study Group, Inc.
Shell Canada Limited
Shell Chemical Corporation
Shell Oil Company
Skelly Oil Company
Société du Pipe-Line Mediterranee-Rhone
Société du Pipe-Line Sud-Européen
Southern California Edison Company
Southern Services, Inc.
Standard Oil Company of California
Standard Oil Company (Kentucky)
Steep Rock Iron Mines, Limited
Sun Oil Company
Syncrude Canada Ltd.
Tazama Pipelines Limited
Tenneco, Inc.
Texaco, Inc.
S. A. Texaco Belgium N. V.
Texas A & M University
Thyssenche Gas und Wasserwerke G.m.b.H.
Tidewater Oil Company
Trans-Arabian Pipe Line Company
Trans-Canada Pipe Lines Limited
Transcontinental Gas Pipe Line Corporation
Trans Mountain Oil Pipe Line Company
Directorate of State Hydraulic Works, Turkey
Union Carbide Corporation
Union Carbide of Canada, Limited
Union Electric Company
Union Gas Company of Canada, Limited
Union Oil Company of California
U.S. Air Force
U.S. Army, Corps of Engineers
U.S. Atomic Energy Commission
U.S. Navy
United States Steel Corporation
United Vintners, Inc.
University of Toronto
Utah Power & Light Company
Ministry of Public Works, Venezuela
State Electricity Commission, Victoria, Australia
Westcoast Transmission Company Limited
West Texas Utilities Company
Western Energy Supply & Transmission Associates
Westinghouse Electric Corp.
Yacimientos Petroliferos Fiscales (YPF)

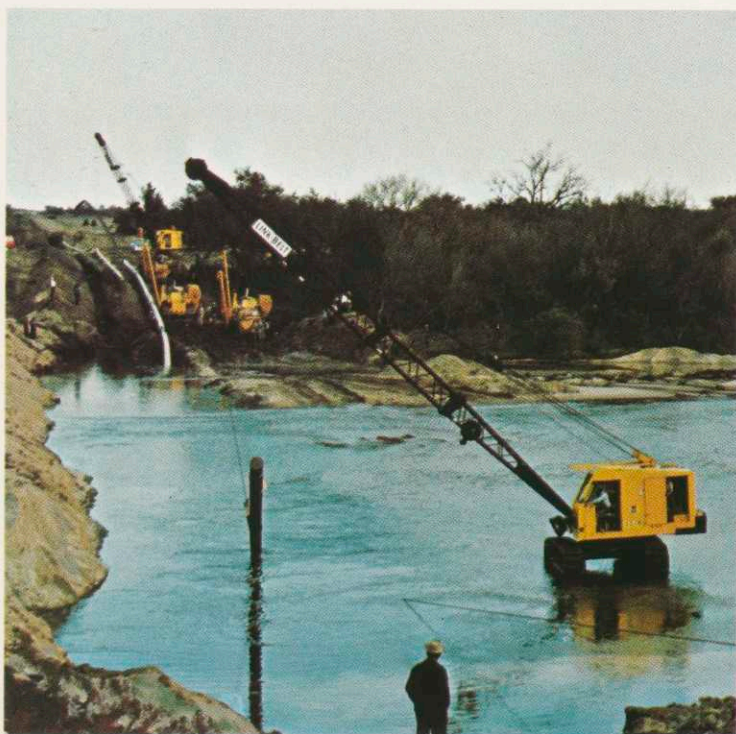


Waste dump leach precipitation project, Utah, reclaims 150 tons-per-day of copper from mine waste dump material.

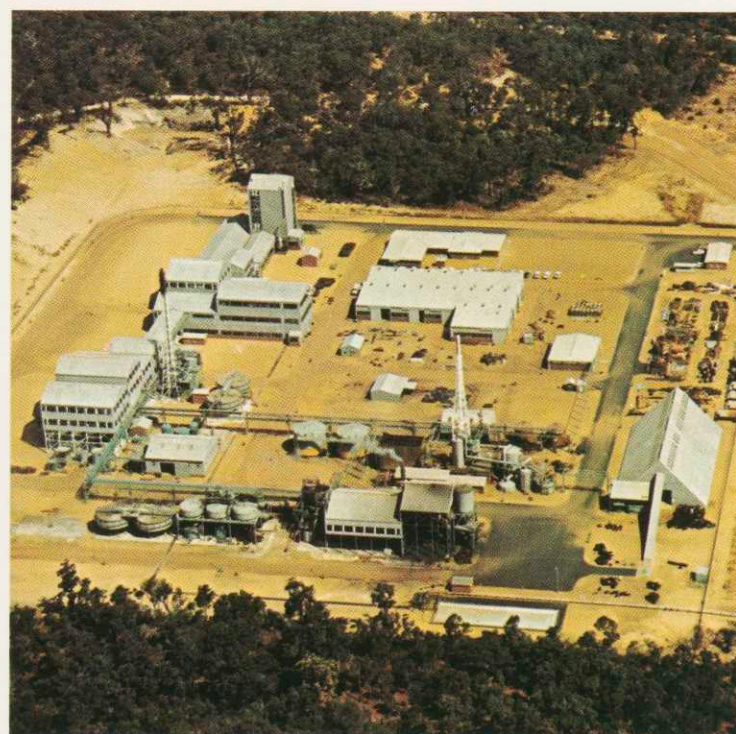


Luxury homes, a full range of recreational facilities, shopping center, and a man-made lake are parts of the master plan for a new community, Southern California.

SOME ADDITIONAL BECHTEL PROJECTS



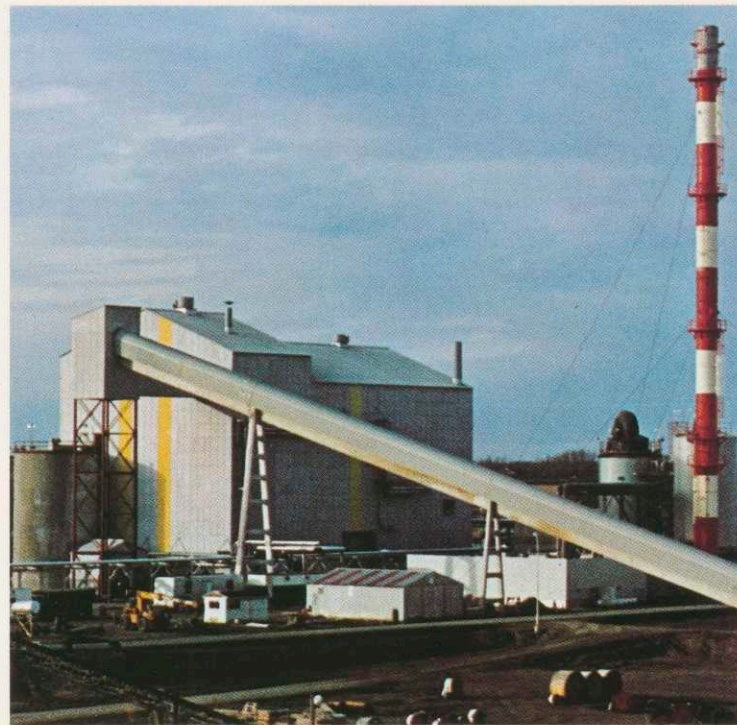
Water crossing of petroleum products pipeline, Argentina, which will speed distribution to the country's key markets.



Titanium oxide plant, Australia, features chemical extraction of valuable products from ores.



Petrochemical complex, Texas, attests to the company's capabilities in this fast-growing field.



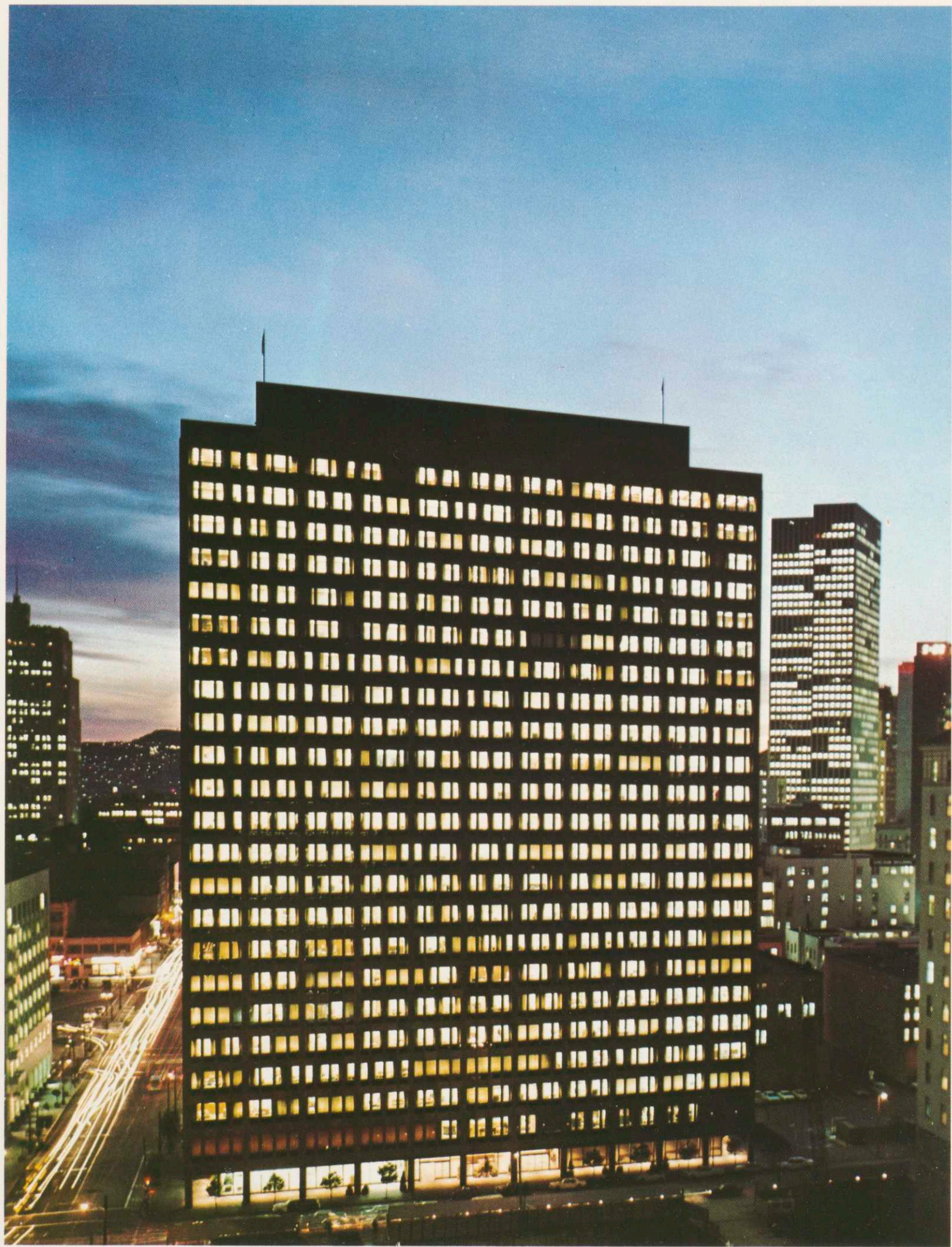
Fertilizer plant, Alberta, Canada, for which the company had various design and construction responsibilities and overall project management.



Conventional electric generating station, New Jersey, of which both units were turn-key responsibilities, features unit train coal handling.



Iron ore complex, Labrador, has had numerous additions and expansions creating one of the world's largest facilities.



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MELBOURNE

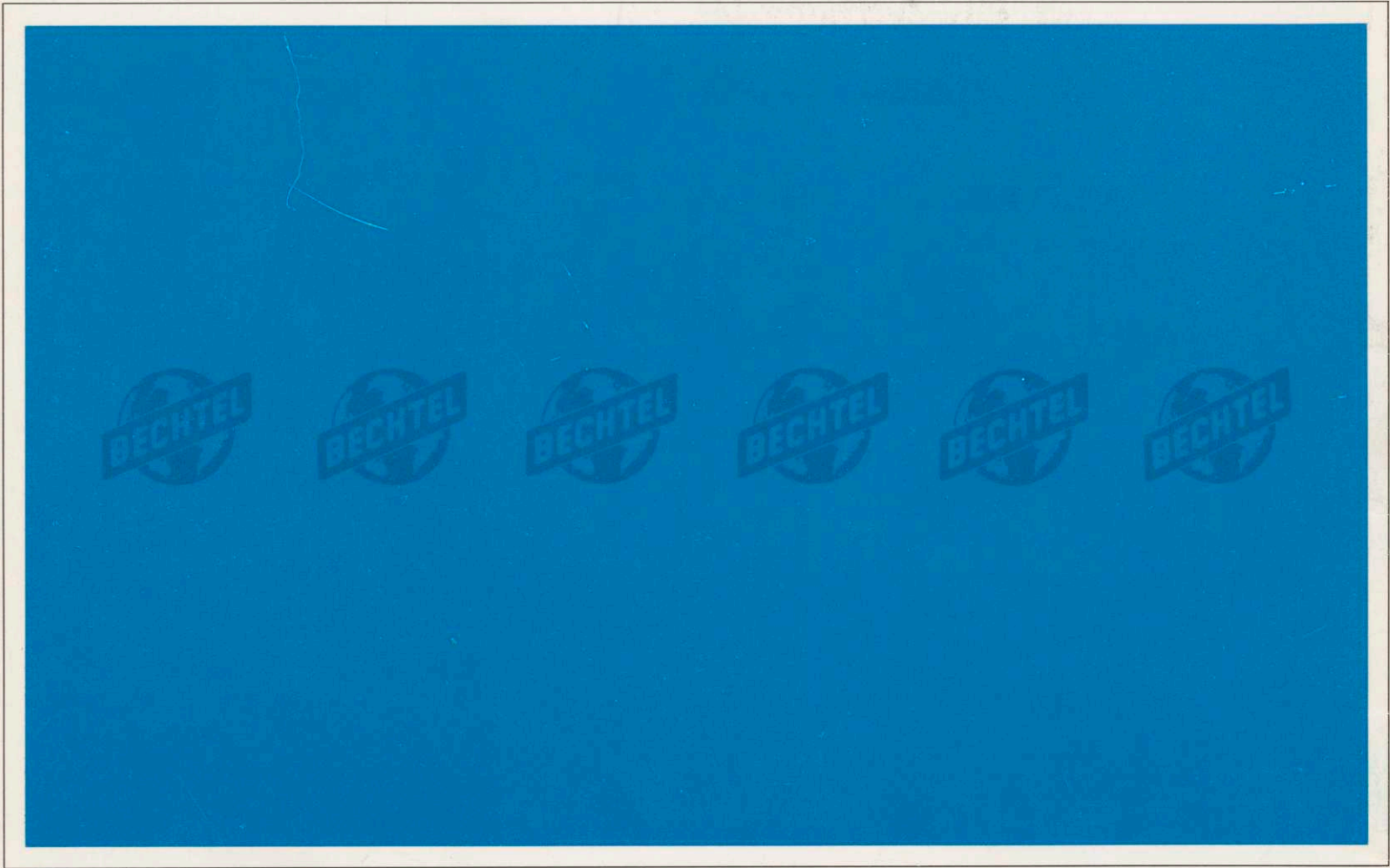
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Bechtel National, Inc.

Engineers--Constructors

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San Francisco, California

Mail Address: P.O. Box 3965, San Francisco, CA 94119



January 22, 1979

Professor C.L. Wilson, Director
Workshop on Alternative Energy Strategy
Massachusetts Institute of Technology
E40 - 179
Cambridge, Massachusetts 02139

Dear Professor Wilson:

As a follow-up to Mr. W.K. Davis' discussions with you, Bechtel is pleased to submit the attached "Memorandum of Understanding" to allow Dr. J.M. Gallagher to participate as Technical Director of the World Coal Study for an eighteen month period.

Our standard conditions for Department of Energy work are basic salaries plus 34 percent payroll additives; 98.56 percent burden; and 10 percent fee. With Dr. Gallagher's present salary, this works out to be \$7,843.00 per month.

However, considering the importance of the World Coal Study, we propose to contribute our fee as well as certain other indirect costs normally allowable by the Department of Energy. On this basis, the cost to MIT is \$4,130.00 per month for Dr. Gallagher's services. Thus, Bechtel's overall contribution to the World Coal Study is approximately \$66,000 for the eighteen month assignment. In addition, MIT is to be responsible for all of Dr. Gallagher's office and travel costs and is to reimburse Bechtel for the costs associated with Dr. Gallagher's move to Boston and subsequent return to San Francisco.

Attached are two signed copies of a "Memorandum of Understanding" covering this assignment. If you accept this proposal, please sign the attachment and return one copy to me for our files.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "I. Leibson". The signature is fluid and cursive, with the first letter "I" being particularly large and stylized.

I. Leibson
Vice President and Manager
Research and Engineering

IL/RPS/mh

Attachments.