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INTERNATIONAL EDITION

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Canadian manufacturers offer concrete advantages



A 1971 winner of an award for excellence as "an outstanding example of insitu and precast concrete work used together structurally and as a cladding," Canada's National Arts Centre in Ottawa, Ontario, was built by the Federal Government in honour of the country's 100th birthday. The award was presented as part of the National Design Council's Concrete Awards Program which aims at encouraging high standards of design and imaginative and creative use of concrete in the construction of buildings, bridges and other structures. Reinforced concrete is used throughout the Arts Centre as the structural material with exposed aggregate precast concrete covering the exterior walls and providing terrace paving.

Situated on six acres (2.42 hectares) along the banks of the Rideau Canal in downtown Ottawa, the National Arts Centre makes total use of its attractive site in the Canadian capital. A focal point for year-round outdoor activities, the NAC's terraces provide shelter and landscaping as well as the facilities themselves. The larger masses of the three theatres can be seen in the background. Indoors, the NAC accommodates a 2,300-seat opera house concert hall, a 900-seat theatre, and a small experimental theatre of flexible capacity. The interior of the opera is ribbed bronze anodized aluminum and glass screen between precast concrete clad columns. Sandblasted concrete, exposed precast concrete and oak battened mesh are used to enhance the walls of other interior areas.

by Maryanne Taylor
Canada Courier staff writer

Concrete. Think about what that word means.

To a philosopher it represents persons, physical things or events. Colloquially it means something solid, something that can be seen.

To an engineer concrete is the hardened product made by combining a precise mixture of water, sand, aggregate and cement. It is used in two principal types of construction: heavy, or engineering construction, and building construction.

Heavy construction covers a number of areas including: marine, highway and airport projects; electrical power, waterworks and sewage schemes; and

the construction of hydro dams and power plants.

Building construction encompasses among others the erection of residential, industrial, commercial and institutional structures.

The technology of plain concrete is a materials engineering science. It concerns the mixing, casting, finishing and curing of concrete and the effects of these processes on the physical and chemical properties of concrete.

While good concrete for small jobs and minor repairs can be mixed at home, the design and construction of concrete structures is a combination of science, art and experience that should be undertaken only by professionals who are familiar with concrete technology.

Such are four companies featured in this edition of Canada Courier — Aluma Building Systems, Spiroll Corporation, Universal Sections and Dy-Core Systems. Each is expert. The techniques, materials and equipment each company provides are designed to use concrete to its best advantage.

As the twenty-first century approaches all countries will be using concrete increasingly, taking advantage of the versatility of the product. Both ready mixed concrete and concrete masonry are usually made from basic materials available locally, so there are no construction delays in shipping materials from remote areas. And concrete construction contributes to the health of the economy through the purchase of local materials and the employment of local labour.

Suitable for most multi-purpose occupancies, concrete is unaffected by high heat and meets most fire code regulations. It satisfies a wide range of environmental performance requirements as well. Concrete hardens quickly into an extremely strong and durable material that is comparatively inexpensive and simple to make.

In fact, it is so durable that many examples of early concrete construction can still be seen today.

The ancient Egyptians discovered that lime and gypsum worked well as the cementing agent for the stone masonry of their pyramids, while the

Romans developed a cement by mixing slaked lime with a volcanic ash called pozzolan to produce a hydraulic cement that hardened under water. This type of concrete was then used to build such famous structures as the Roman Wall, the Aqueducts, the Pantheon and Colosseum.

Portland cement, so called because it produced a yellowish-grey concrete which resembled building stone quarried in the Isle of Portland off the coast of Britain, was first patented by Joseph Aspdin in 1824. It became the dominant cementing material used in concrete construction about 1900 and today the word "concrete" without any qualifying term is used mainly as an abbreviation for Portland cement concrete.

The practice of reinforcing concrete with iron or steel rods was first used during the latter part of the 19th century. Modern pre-stressed concrete construction, using high strength steel wires, was developed in 1927 by a French engineer, Eugene Freyssinet.

Pretensioned, prestressed concrete is made by casting concrete around steel wires or cables which have been stretched by hydraulic jacks. After the concrete hardens and bonds to the steel, the jacks are released and the concrete is compressed. Because concrete is strongest when compressed, and steel is at its strongest when stretched, prestressing results in the maximum benefit of each material being obtained.

Major-General R.E. Bradley is credited with making the first cement in Canada in Hull, Quebec, in 1856, from a black Quebec limestone. For quite some time after that, domestic production was geared solely to looking after local needs. Canada used imported Portland cement until 1889 when the first Canadian plants went into operation. From 1950 to 1970 the number of plants producing cement in Canada tripled.

The cement industry is of course influenced by construction activity which serves as a barometer of the general economic climate within the country or the world.

Construction is Canada's largest single industry, employing directly as

many as 650,000 persons in on-site projects and indirectly accounting for thousands of other jobs in support-and-supply-oriented industries.

In 1950 the total world production of cement was about 113 million tons (102.5 million metric tons) a year while the world population was approximately 2.5 billion. Europe, in 1950, accounted for 48 per cent of the world's cement while North America produced 37 per cent of the world's total with only 7 per cent of the population.

By 1970, cement production had increased 480 per cent to 655 million tons (594 million metric tons) a year while the world population had risen by only one-half to 3.6 billion.

Consumption on a per capita basis also increased greatly from less than 100 pounds (45.40 kg) per person in 1950 to 360 pounds (163.44 kg) per person in 1970.

In Europe and Asia the production of

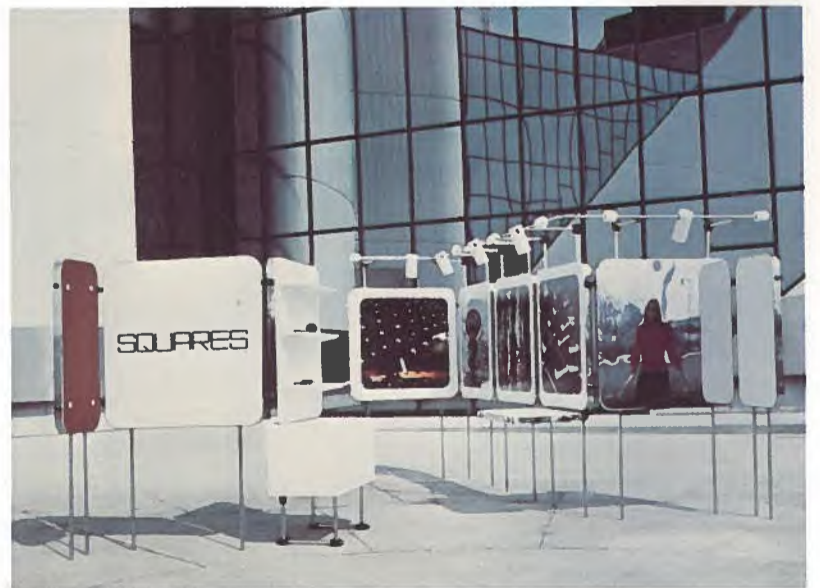
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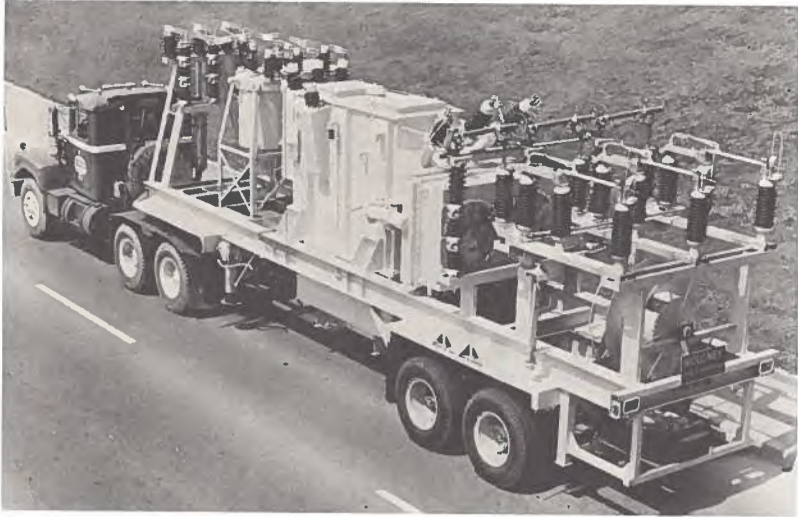


Sturdy green houses for year-round gardeners page 6

On display the "Squares" way



Ultimate in quality, attractive in price . . . two of the features of the "Squares" display panels designed by Kinnan Industrial Designs Incorporated, Downsview, Ontario. Consisting of only six basic parts, the system can be easily erected and dismantled without the costly need of skilled labour. The two-sided panels, produced with a moulded styrene foam core, laminated melamine surfaces and a polished chrome wrap-around, allow photos, graphics and other information material to be applied directly to their surfaces or permit infill panels of various finishes — velcro, burlap, cork — to be attached by velcro fasteners. Standard panels are finished in white textured laminate or plexiglass, with other finishes available on a custom basis. Transparency panels, for use as opaque rear projection display screens or together with standard light boxes for back-lit graphics, are also part of the "Squares" system. Kinnan Industrial Designs Incorporated seeks international markets and/or distributors. Code 1-137.



Mobile transformers speed hydro repairs

Designed and manufactured by Moloney Electric Company of Canada Limited, Toronto, Ontario, this mobile substation transformer was recently purchased by the Pennsylvania Electric Company of Johnstown, Pennsylvania, where it will be used in the area of the rugged Allegheny Mountains. The 10MVA mobile substation features externally operated primary and secondary series parallel switches to provide rapid reconnection and to allow the substation to be quickly put into operation shortly after the arrival at the scene of any breakdown emergency. In addition to reducing inventory of stand-by transformers, the substation will also be used for maintenance of transformer stations and as a temporary power supply to new areas or plants. Moloney Electric mobile substations have been delivered to many public utilities in Canada, the United States and South America. Code 2-157.

Bound for business

No matter what you want to buy, you're sure to find a company that provides it listed in this book — RayMan's Canadian Trade Guide.

The guide is published by a Willowdale (Toronto), Ontario, company, RayMan Publishers Inc.. A valuable business almanac, it contains more than 500,000 cross-referenced listings of importers, exporters, manufacturers, wholesalers and distributors, as well as the names of more than 100,000 prospective buyers of goods in Canada and around the world.

One of the most inexpensive guides of its type on the market today, RayMan's Canadian Trade Guide lists entries alphabetically by business category and company beginning with the full firm name, complete address, person to contact and number of employees — all in bold face type.

The guide also contains more than 600 pages of editorial content and trade information and a new three-volume section of manufacturers' catalogues. Included also is a comprehensive world trade fair and exhibition list that gives the exact date and location of more than 25,000 trade shows being held during 1976, new metric conversion tables and a 100-year calendar.

Ray Man, president of the company, says the eight-volume edition was conceived because it was felt there was

not available in Canada a guide that provided the sort of information a businessman requires when looking at Canada from the point of view of a would-be importer or exporter.

The guide is bound in ox-blood vinyl with gold-leaf lettering with the company name stamped on the cover at no extra cost. Each volume measures 8½ by 11 by 3½ inches thick (21.6 by 27.94 by 8.89 cm) and weighs 80 pounds (36.3 kg).

To accompany the guide, RayMan also produces an Executive Diary. Designed for maximum efficiency, practical and attractive, the diary replaces separate telephone books, appointment calendars and daily diaries by combining them into one book for fast, easy reference.

A perfect Christmas gift, the Executive Diary also contains 30 separate sections of useful information on postal rates, direct dialing, world currencies, simple interest tables and standard time differences. A 100-year calendar and a section on astrological forecasting are also included.

In its second successful year of publication, the RayMan Canadian Trade Guide is available at a discount to all import and export organizations. This offer also applies to libraries, universities and other major institutions. Code 2-381

At home around the world

Prefabricated modular buildings produced 20 to 30 years ago — and still performing the tasks for which they were designed — is a sure sign of durability.

This is just one of the qualities inherent in the buildings produced by ATCO (Eastern) Limited, among the world's largest manufacturers of prefabricated modular buildings.

ATCO began on a small scale in 1945 by supplying units for construction workers in remote locations. Today, the firm's pre-constructed buildings can be found in some 50 nations on every continent, from the Arctic to the jungles of South America, and from Southeast Asia to the deserts of the Sahara.

Also increased and diversified over the years are ATCO's products — all of which are designed to the customer's requirements and the climatic conditions under which the units will have to perform.

The firm now produces residential home units with two, three and four bedrooms, decorated and functionally equipped to the client's preferences; mobile housing units which normally are divided into three rooms — kitchen, living room and bedroom — and washroom; and educational facilities which are constructed by the multiplex system.

This system allows the customer to purchase what is necessary at the time yet still be able to add additional units when the need arises. Starting with a few modular units the customer could later expand them to provide a complete, self-contained school including offices, staff rooms, library, washrooms and utility areas.

Additional ATCO products include: industrial units, institutional units which utilize wood and steel, tourist and general accommodation facilities, superspan galvanized steel units which are designed for all climatic protection purposes and used at airports and seaports; fold-a-way galvanized and coated steel units for use as manufacturing, warehousing and equipment storage; and airport and ground handling equipment.

While units vary to suit different purposes, the outside measurements of standard ATCO units are 3.1m by 12.4m by 2.9m. The units, fully equipped with furniture and specified facilities, can be shipped in set-up cube form or in knockdown configurations. About 85 per cent of the units exported are knock-down shipments.

ATCO has a proven capability to meet demanding delivery schedules on short notice. One instance was the firm's delivery — in only 45 days — of

canada
courier

Anna Armstrong Hibberd, Editor

Don Wight, Assistant Editor

Al Viscount, Designer

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500 classrooms and 200 teachers' residences to the Libyan Government.

This large volume delivery on very short notice is facilitated by ATCO's having 15 wholly-owned subsidiaries strategically located around the world, not to mention an international personnel able to converse in 25 languages.

ACTO is supplying \$60,000,000 worth of camp facilities for the Trans-Alaskan pipeline, housing units for an irrigation project in Peru, two prefabricated motels to Mauritania, and is now completing the supply of eight schools, each with 18 classrooms, to Saudi Arabia. Code 2-240



Interior view of completely furnished prefabricated motel built by ATCO for the United Building Corporation in Mauritania. The firm provided two motels, one with 60 rooms, the other with 40 rooms.



Importers, exporters, manufacturers, wholesalers and distributors of every commodity on the market are listed in RayMan's 1976 Canadian Trade Guide. More than 500,000 up-to-date entries are included in this eight-volume edition.



Economical, practical and easily assembled, ATCO's superspan is specifically designed for tropical climates. The all-steel computer pre-designed structure is a modular system of complete buildings that is ideal for manufacturing and warehousing and of particular interest to customers concerned with economy and speed.

Systematically cool

The move today in industrial refrigeration equipment is to completely packaged systems.

A leader in this field is Canada's largest engineer, designer and manufacturer of such systems, CIMCO Limited, Toronto, Ontario.

CIMCO's "skidded" or "packaged" Unipak systems are used in many parts of the world in practically every type of industry. The major users are the petro-chemical, food, mining, fishing and chemical industries.

The Unipak custom built refrigeration or compression system is engineered and designed to meet pre-established operation capacities and may function in manufacturing or storage operations that involve refrigeration, reliquefaction, compression and vapor recovery.

Completely assembled on a structural steel base, the Unipak is insulated, pre-wired and tested under shop condi-

tions, assuring that the total functions required by the customer are all contained in one integral unit.

Small or large capacity plants pose no problem because Unipak systems can be built to any size. For an extremely large capacity plant CIMCO simply builds the system in specially designed sections which are quickly and easily connected on the job site.

Nor are shipping and installation space restrictions limiting factors — the company will build the system so that the physical configuration of the package is adapted to meet the prescribed conditions.

Compact, with quick, trouble-free start-up and low operational and maintenance costs, the Unipaks are available in capacities from 10 to 5,000 tons (9.1 to 4,536 metric tons). Evaporator temperatures are from -260°F to +60°F (-162°C to +16°C) and the horsepower is from three to 5,000 or more.

Unipak systems offer the customer a wide choice of components. Compressors can be of the single stage, two stage, internally mounted, both lubricated and oil-free reciprocating variety; or of the rotary; centrifugal; oil-injected and oil-free screw type.

Oil-free refrigeration systems using Teflon Ring and Labyrinth Ring compressors are also available. This type of oil-free system is particularly adaptable to propane, propylene, ethylene, ethane, methane, and the halogenated hydrocarbons in the low temperature ranges below -40°F (-40°C).

Control systems can be electrical, electronic or pneumatic. And drivers can be electrical motors, gas engine, diesel engine or gas and steam turbines.

CIMCO Limited has exported its industrial refrigeration systems to such countries as Australia, the United States and Cuba and seeks further international markets.

Code 3-164



This Unipak screw compressor system, trailer mounted, has two propane fueled engines with horsepowers of 190 and 305. It is capable of cooling 7,000 gallons per hour (31,850 litres/hr.) of propane gas from +40°F to -44°F (+4°C to -42°C). Condensing is air cooled. An engine-driven generator supplies auxiliary power for the trailer. The unit is designed and manufactured by CIMCO Limited, Canada's largest manufacturer of industrial refrigeration systems.

High capacity, fast acting aircraft refueller



Delivered recently to Vancouver's International Airport, this jumbo aircraft refueller from Willock Industries Ltd., Vancouver, British Columbia, is the largest refuelling tank trailer ever built in Canada. Almost twice the size of the largest highway semi-trailer tanker, the all aluminum refueller can transfer its 16,500 Imperial gallons (75,075 litres) of pure jet fuel into a jumbo aircraft at a rate of 600 gallons (2,730 litres) per minute. In the event of a last minute change in load factors, the unit can also defuel the aircraft at 250 gallons (1,138 litres) per minute. Built-in features for ease of operation and maximum safety include complete remote control, pressure control and all possible safety interlocks. A subsidiary of Westank Industries Limited, Willock Industries has been filling aircraft industry requirements for more than 20 years. The company also manufactures materials handling and airport ground support equipment such as hi-lift food service vehicles, baggage handling units and tow tractors. Specialized transport equipment including truck-mounted cement mixers, tank trailers, heavy equipment low-boys and flat bed trailers are also produced.

Code 3-332

Air dryers serve variety of industries

Taking water out of compressed air is the business of T G Pneutech Limited, manufacturers and designers of refrigerated air dryers.

Water in a compressed air system washes the lubricant out of air motors, causing premature failure. It destroys the seals in pneumatic cylinders, causes erratic readings from pneumatic control systems and often contaminates the manufactured product with which it comes in contact.

T G Pneutech's air dryers greatly reduce these problems. The machine takes in compressed air at a nominal 100 PSIG and 100°F (38°C). It reduces the air temperature to approximately 37°F (2.7°C) and removes the moisture through centrifugal separation.

The air is then rewarmed to approximately 85°F (29.4°C). At this temperature the relative humidity of the compressed air is three to four per cent and is essentially dry.

There is a wide demand for this type of equipment since dry compressed air is used in practically every type of industry: steel mills, electronics plants, food processing and pharmaceutical houses, metal fabricating plants, textile mills, medical and dental offices, aircraft industries and laboratories.

In textile mills compressed air dryers have increased production by as much

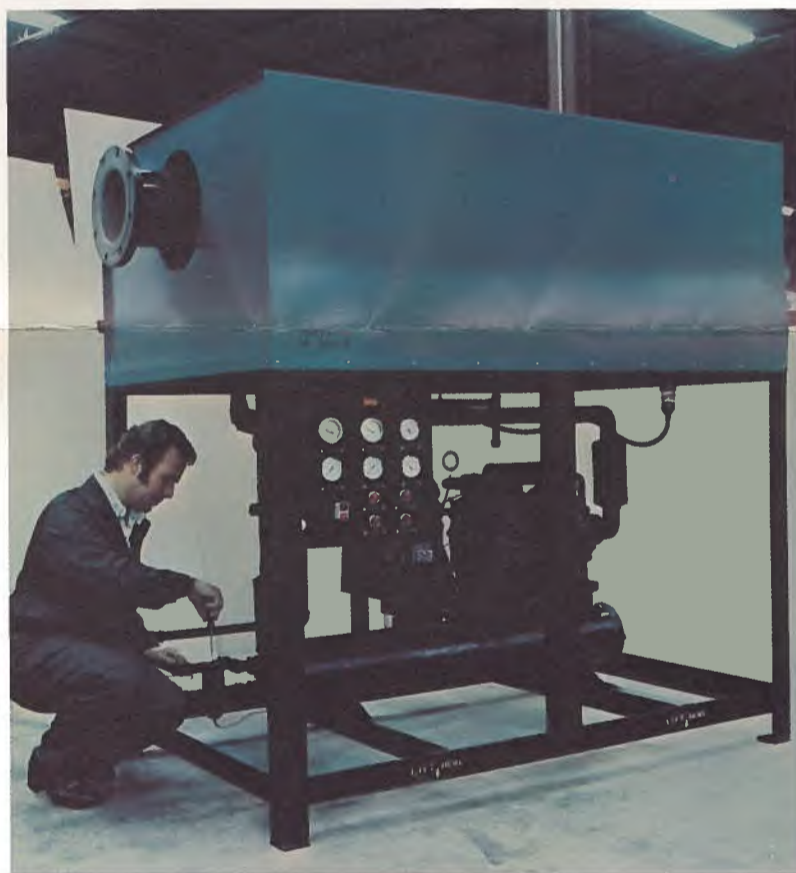
as 70 per cent while in chemical plants they have permitted pneumatic instruments, valves and cylinders to operate more smoothly and efficiently. The same is true in spray painting where dry compressed air helps prevent surfaces being damaged by spattering and eliminates the need for resanding and repainting.

T G Pneutech air dryers, fully automatic, self-compensating and requiring no operator intervention, are available in sizes from five standard cubic feet per minute to 25000SCFM. The dryers, from 2000SCFM and above, are available with a dewpoint of 38°F (3.3°C) as are the smaller ones when so requested.

Fabricated from quality materials and components with all vessels and safety devices meeting or exceeding Association of Mechanical Engineers and local government specifications, T G Pneutech air dryers are available in 30 different sizes — many of which can be specially tailored to meet the customer's particular environmental needs.

All T G Pneutech dryers are factory tested and, if the customer requires, are site calibrated.

T G Pneutech Limited of Burlington, Ontario, initially seeks international distributors who eventually will become licensed manufacturers. Code 3-231.



Designed for the Continental Can Company, this AD2500 refrigerated air dryer by T G Pneutech operates with an air entering temperature of approximately 110°F (43°C) and with a cooling water temperature of 100°F (38°C). Instrumentation is in both imperial and metric scales.

Strength with reinforced glass fibre

James Fibre-Glass Manufacturing Co. Limited is successfully weaving its way through 16 countries throughout the world.

Weavers of heavy fabrics which end up in the reinforced plastic market, James Fibre-Glass of Concord, Ontario, produces woven rovings, Fabmat type C, Liasil, Liasil/Fabmat and lightweight woven rovings.

Woven rovings are heavy drapeable fabrics manufactured with polyester or epoxy compatible continuous rovings. They are used mainly in structural objects — boats, swimming pools and corrosion equipment — where tensile and flexural strength is required.

Liasil consists of a flat and homogeneous layer of parallel fibre glass rovings held together by separate groups of cross threads. The unidirectional construction of Liasil enables the accurate positioning of the fibre glass rovings to match the stresses occurring

in the product.

Liasil may be used as the main reinforcing material in tanks, pipes and pressure vessels to produce stronger and lighter structures which are highly resistant to impact and delamination. When combined with other reinforcing materials, Liasil increases the bending strength and modulus of elasticity as well as reducing deflection in the finished structure.

Fabmat is a combination reinforcement consisting of a layer of woven rovings to which a controlled deposit of chopped fibre glass strands have been attached. The two-component Fabmat forms a strong but drapeable reinforcement unit that combines the bidirectional orientation of woven rovings and the isotropic orientation of chopped strand mat.

The 15-year old company exports to countries on every continent.

Code 3-437

Concrete advantages

(Continued from page 1)

cement increased in 1970, indicating continued and accelerated construction activity. In the same period all developing countries increased their requirements for residential, institutional and industrial buildings as well as developing energy resources.

By 1972, the world production of cement was more than 700 million tons (635 million metric tons) — up seven per cent from 1971 — with even greater additions made to the production forecast to meet the demands of many developing countries.

By the end of 1975, the cement industry in Canada is expected to expand to 17.5 million tons (15.87 million metric tons) a year, reflecting the amount of construction expected in the next few years.

Future cement requirements are predicted to be huge as urban communities swell to megalopolis proportions, creating concentrated demands for new building construction of the residential, institutional, commercial and industrial types. In order to support this growth, more highways, airports, water and sewer works and power supply facilities will be needed.

To keep pace with the demand, buildings will have to be easily constructed, pleasing-to-the-eye, and functional — all benefits of using concrete building construction.

Prestressed reinforced concrete construction provides long economical spans that result in large open spaces, while precast, prefabricated building components, such as the precast concrete walls, roofs and floors made by

two Canadian companies, Spiroll and Dy-Core, offer the ultimate in economical flexibility because of the ease with which they can be placed in any position.

Painted concrete ceilings offer excellent reflective surfaces for light fixtures to provide high intensity light without annoying bright spots. Concrete also provides a natural barrier to unwanted sound transmission and helps reduce vibration from floor-mounted industrial equipment.

Maintenance of concrete structures is minimal. Concrete is unaffected by water, resists weathering, and is not easily damaged by either the deliberate attacks of vandals or the onslaught of hurricanes or tornadoes. Structures are easy to keep clean since water and cleansers don't corrode concrete or cause other damage, and concrete can't be penetrated by insects or vermin.

Concrete provides beauty and permanence. Dramatic designs can be economically achieved by combining the structural function with the architectural appearance. The number of shapes, patterns and textures that can be used is limitless.

To accompany modern designs, the use of up-to-date construction methods, such as those offered by Aluma, Spiroll, Universal and Dy-Core, are needed.

Each of these companies has developed and refined its processes to make use of the most modern and innovative methods applicable to concrete construction in order to minimize construction costs and save on construction time.

Code 4-140

Expanding applications for Corefloor system

For more than a decade, a Winnipeg, Manitoba, firm, Spiroll Corporation Ltd., has been concerned with the production of quality and quantity shelter for a world population that is expected to double in the next 30 years.

Spiroll designs, manufactures and markets its own construction system, Corefloor, a prestressed, hollow core concrete slab that is available, through a series of extruders, in a wide range of widths, thicknesses and lengths.

Compared with other construction systems, Corefloor has a number of distinct advantages. It can be produced quickly to meet a wide range of specifications and is enormously resistant to fire and tensile stress — a feature that has already gained it great acceptance in earthquake-prone areas.

The labour input into Corefloor's production is low and the system is speedy.

Important also is the streamlined profile of a Corefloor slab that reduces the dead-space between the floor and ceiling. This saving means that within the height of a standard 30-storey building, Corefloor creates an additional storey of usable space.

Corefloor's hollow core construction will produce a lighter flooring and lower dead weight for any structure, resulting in less costly piling and foundation work. The hollow core also makes a perfect duct for air conditioning systems and for running electrical and water conduits.

Originally conceived as a flooring system, Corefloor has recently been

used as a wall panel as well. Experiments and actual construction projects undertaken by producers in a number of countries point to this new application as a major breakthrough when combined as a total system with either Corefloor or another flooring and framing system.

Also of recent interest is the development of a turnkey capability within the Spiroll group that is in keeping with the company's interest in world housing problems.

In addition to its Canadian operations, Spiroll has a network of franchised producers in 28 countries including Japan, India, Belgium, Czechoslovakia, Sweden, Poland, South Africa, Spain, the Philippines and United States.

Code 4-269

These building blocks no child's play!

Universal Sections Limited of Markham, Ontario, with its associated companies, is a specialist in the production of building components and systems that fit in with conventional methods of construction.

Mainly components that form walls, ceilings and floors, Universal's products are used primarily in commercial and industrial buildings, highrise and lowrise apartments, townhouses and single family dwellings.

The company's policy has always been to fit in with the existing construction techniques but, at the same time, keep one step ahead by replacing traditional materials with modern, easily manufactured goods that require no extra skills and little additional training to use.

One of the company's most innovative products, Foam-Form, is manufactured by a Universal subsidiary, Foam-Form Canada Ltd. Lightweight and fire-retardant, Foam-Form is a hollow core, polystyrene block which acts as a form to receive poured concrete. After the concrete has cured it remains in place as a well-insulated, structural, concrete wall.

Because it does two jobs in one, Foam-Form is a very competitive product. Shaped like a block, each one consists of two molded polystyrene panels much like those used in packing boxes to protect fragile products from damage during shipping. The panels are held together with several pieces of rigid expanded steel mesh, the space between the two panels varying in depth from 4 to 10 inches (10.16 to 25.40 cm). Each fabricated block measures 4 feet (1.2m) in length with a depth of 16 inches (40.64cm).

To build a wall, the blocks are stacked in courses like brickwork, fitting together easily with simple tongue and groove joints. Horizontal reinforcing rods are laid on top of the mesh ribs and vertical rods are inserted in the voids.

Once the blocks are stacked to the desired height, concrete is pumped or poured into the hollow foam forms.

When the concrete cures, the blocks

remain in place, providing a total of three inches (7.62cm) of foam insulation over a continuous reinforced concrete wall. The need for separate framing is thus eliminated as is the time required for dismantling the framework.

A building constructed with Foam-Form will not only be well insulated it will help to conserve energy by requiring less heat and air conditioning than conventionally-built structures.

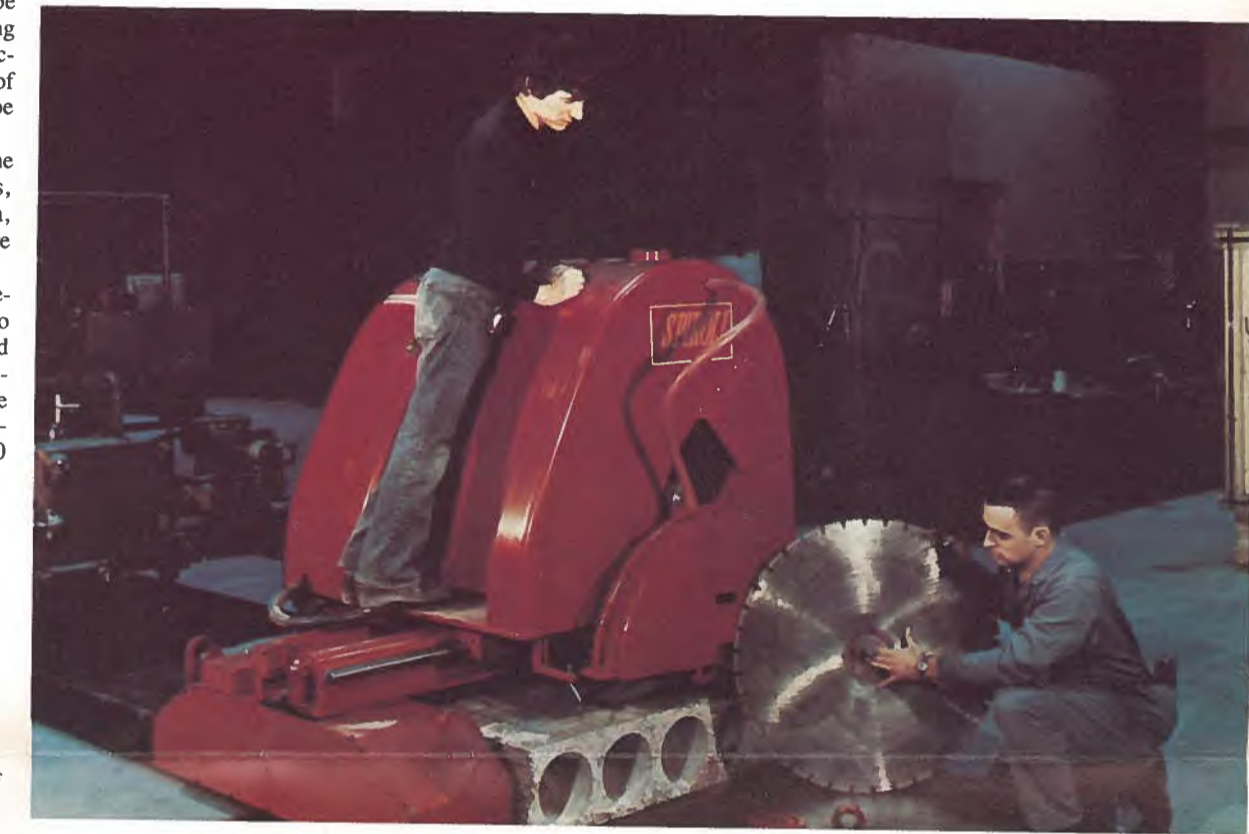
And after the concrete cures, any kind of conventional interior wall finishing can be glued on and bricks or other facing material applied to the exterior.

Another advantage of building with Foam-Form is that in the far northern regions, the relatively-short construction season can actually be lengthened because the insulative properties of polystyrene allow the poured concrete to cure before it has a chance to freeze, even at -34°C (-30°F).

Other advantages: Foam-Form does away with the need for mortar and the need for additional labour; construction time is also speeded up — houses can be closed in 6 days, finished in 21; and, because each block weighs only three pounds (1.4kg), one man carrying two under each arm is transporting the equivalent of 24 standard cement blocks.

Foam-Form Canada Ltd. manufactures its product in 11 factories in North and South America, and holds valid patents for it in 22 countries. At present the company is actively engaged in licencing its manufacture and distribution in other countries including Britain, Italy, Germany and Brazil.

Universal Sections, Foam-Form's parent company, started in business roll forming metal products such as expanded metal lath for the plastering industry, followed by metal dry wall studs to replace nominal 2 inch by 3 inch and 2 inch by 4 inch (5.08cm by 7.62cm and 5.08cm by 10.16cm) timber studs for partitions. Steel floor joists, metal doors and door frames, metal Soffit and fascia, industrial cladding, roof decking and steel folding doors are some of the other rolled



Technicians complete the final assembly of Spiroll's new Mark V Concrete Saw on a test bed at the company's Design and Development Centre in Winnipeg. The saw is part of a complete line of systems equipment designed, developed and manufactured by Spiroll for its producers.



These men are busy pouring concrete into Foam-Form, a hollow core, polystyrene block made by a subsidiary company of Universal Sections, Foam-Form Canada Ltd. The blocks, which are stacked in courses like brickwork to make a wall, act as a form to receive poured concrete. After the concrete has cured, they remain in place to provide high quality insulation over a continuous reinforced concrete wall.

Code 4-369

formed products manufactured by Universal Sections.

One of the pioneers of suspended acoustical ceilings, the company has manufacturing facilities for them in Canada and Britain.

Universal also has subsidiary companies making products for the consumer and do-it-yourself markets including pre-painted metal garden sheds, domestic shelving, suspended ceiling and steel studs.

Professional Machine & Tool Co. Ltd., a Toronto-based subsidiary, manufactures high speed roll forming machinery that is exported to Britain, countries of Europe, and the United States.

Aluma techniques are flying high — speeding work below ground, too

Above and below ground, Aluma Building Systems Inc. can make high-rise construction faster and easier.

Since 1972 the Toronto-based company has been marketing a Canadian-designed system of building construction that not only speeds up the entire construction process but results in labour savings of up to 30 per cent at sites where concrete forming is used.

Aluma's system is made up of two lightweight, high strength aluminum forming systems — the flying form for above ground construction and the stationary system for use in areas where flying is impractical or impossible.

The firm's flying form method of concrete pouring incorporates a number of special features not found in other systems. Highly mobile because of their light weight, Aluma's flying forms can be moved from floor to floor by an average capacity tower crane yet still be made large enough (up to 2,100 square feet — 195.09m²) to support a complete bay for concrete pouring.

Costly on-site tear-down time is also eliminated with Aluma's easy-to-move lightweight forms and transportation costs to and from the job site are reduced as well.

Once the form has been assembled on the lower floors, it remains intact throughout the entire project, reducing the manpower normally required to handle it.

Additional labour savings result when the larger forms are used: these reduce the number of components involved in form assembly and produce a superior deck quality by eliminating the need for decking joints. Fewer adjustment jacks are needed, and

material loss through waste is kept to a minimum.

Aluma's stationary forming system is designed to handle forming in below-ground locations, in areas supported by irregularly spaced columns and in places where insufficient repetition precludes the use of flying forms.

The stationary forming system makes use of an Aluma-Systems high strength extruded aluminum beam that performs equally well as a joist or a stringer. And its constant 6½-inch (16.51-cm) depth allows overlapping of stringers which simplifies the accommodation of variations in span without adjustment when erecting and stripping.

The stationary system is unique when it comes to the manner in which it is removed. When the concrete reaches the required strength, single-pole shores are used to support the stringers temporarily. The scaffold frames are completely removed, leaving the entire horizontal system supported only by the pole shores.

Then from a safe distance, the shores are knocked or pulled out from under the stringers and the entire assembly drops to the floor below. This operation alone saves hours of costly labour, yet also helps conserve material. (In conventional forming systems not only do the forms have to be carefully assembled by hand, they must also be dismantled piece-by-piece.)

Compared with conventional wood forming, Aluma's stationary method allows a 35 per cent reduction in the number of joists needed and up to a 40 per cent reduction in stringers and scaffold shoring required.

The Aluma System of concrete

forming is being widely used in such Canadian cities as Vancouver, Toronto, Ottawa, Montreal, Quebec City and Halifax, and is in use on major job locations throughout the United States including locations in Boston, New York City, Miami, Washington and Hawaii.

Aluma considers its flying and stationary forming systems to be essential if countries want to meet rising labour and material costs yet still remain competitive. The company believes its systems would be especially popular in South America and the Caribbean islands, including Cuba. Code 5-169



Concentrating on the job at hand, this workman secures the flooring to the nailing strip on the aluminum stringers as the final step before concrete is poured.



Dismantling Aluma's stationary forming system is fast and easy. When the concrete has reached the required strength, the single-shore poles that temporarily support the underfloor forms are simply knocked or pulled away. The whole sub-floor assembly then drops to the ground, where it can easily be sorted out and picked up by workmen.

Vancouver company expert in concrete technology

It doesn't matter whether it's going to be a floor, roof or wall, if the concrete slab is made with a Dy-Core extruder, the quality will always be consistently high.

Dy-Core Systems, a division of Dyform Engineering Ltd., Vancouver, British Columbia, manufactures an efficient mechanized process for making precast, prestressed, hollow core concrete slabs that will save on construction costs, time and labour.

For use with standard and semi-lightweight concretes, the Dy-Core extruder mass produces standardized prestressed concrete deck and roof deck slabs.

By means of removable die assemblies, this one machine can produce almost any desired size, shape or depth with a changeover time for the various assemblies of only three hours.

The basic principle of operation is that the forward movement of the extruder is controlled by the friction within it. A high frequency vibration of 10,800 cycles in the die creates a fluid

concrete that is forced around a die of the desired cross-sectional shape by a specially-designed screw conveyor compacting the concrete before it is finally extruded.

If there isn't enough water in the mix, the material won't have sufficient paste to become fluid and this will prevent the extruder from moving forward.

The extruder will also reject concrete without enough cement paste so there will always be an excellent bond to the high-tensile prestressing wire or strand. And because of the extreme density and water control, consistent high compressive strength is obtained when the cored slab is subjected to six hours of heated curing at 74°C (165°F).

The result is a structurally sound product: the concrete is so dense immediately after extrusion that it will support the weight of a man.

Providing the aggregate used is satisfactory, this process permits the use of a minimum 8000 p.s.i., 28-day strength for design calculations. And because of the high strength achieved,

camber control is not critical and rejection from strand slippage is eliminated.

The computerized cross-section produced is one of the most efficient on the market today, with the maximum load carrying capacity of the end product always assured.

With present shortages of skilled labour, Dyform's mechanized process fills a real need. The Dy-Core extruder is designed to be a one-man operation. The extruder itself is 10 feet long (3.04m) and weighs less than four tons (3.6 metric tons). It travels four to five feet (1.21 to 1.5m) per minute, and is designed to produce four-foot (1.21-m) wide cored slabs.

A typical plant operation can produce 4,000 square feet (371.60m²) daily with a five-man crew including a mixer

operator and stock piler, at a rate of 100 square feet (9.29m²) per man hour, as compared to double this requirement for some other systems. Additional man hours are required for shipping.

Dy-Core concrete slabs are versatile and can be used in a variety of ways. Hollow rectangular sections can be used as light and power poles. With infill concrete or clay blocks, I-beams can be used as a floor system.

With long-line casting beds, hollow core planks for use as wall cladding can also be manufactured. A special top-forming element produces longitudinal indentations that result in a versatile wall panel combining design flexibility and mass production.

The finished product, available in a variety of textures including an attractive exposed aggregate surface, requires

no plastering. Carpet can be placed directly on top of a Dy-Core floor, paint applied directly to a Dy-Core ceiling or wall.

In addition to supplying the basic extruder, the company offers a wide range of supporting equipment designed to complement and match the basic extruder. Each licensee can be provided with a fully integrated service covering all aspects of systems building from conceptual plant design to final production.

Dy-Core slabs are currently being used in housing projects and office buildings throughout North America and Europe. The company's experience in the field of concrete technology gives it the necessary expertise to provide a well-rounded service anywhere in the world. Code 5-269



The Dy-Core extruder from Dy-Core Systems, a division of Dyform Engineering Ltd., provides a more efficient method of fabricating precast prestressed, hollow core concrete slabs.



The finished product — an attractive lowrise building that used Dy-Core slabs for economical value.

Concerning electrical energy Federal Pioneer is a powerhouse!

Electrical utilities, industries, governments, distributors and contractors throughout the world know they can rely on Federal Pioneer Limited for top quality products and services.

The Toronto, Ontario, company — with 11 manufacturing plants across Canada — makes equipment for the transmission, distribution and control of electrical energy.

Products include a full range of distribution and power transformers, medium and low voltage switchgear, fusible distribution equipment, fuses, unit sub stations, bus duct, circuit breaker panels, distribution boards and electric heating devices.

The company's ground protection equipment includes artificial neutrals, ground fault relays, lifeguard panels,

live line indicators, portable ground fault devices, pump protection panels and surge protectors.

In hospital equipment there are ground integrity monitors, hazard compensators, isolated power panels, isolation monitors and powerground receptacles.

Switchgear equipment includes air circuit breakers, load break switchgear, metal-clad switchgear, metal enclosed switchgear, overcurrent relays, potheads and unit sub stations. And the company's Stab-lok line provides a complete and versatile low voltage load centre system for residential, commercial and industrial applications.

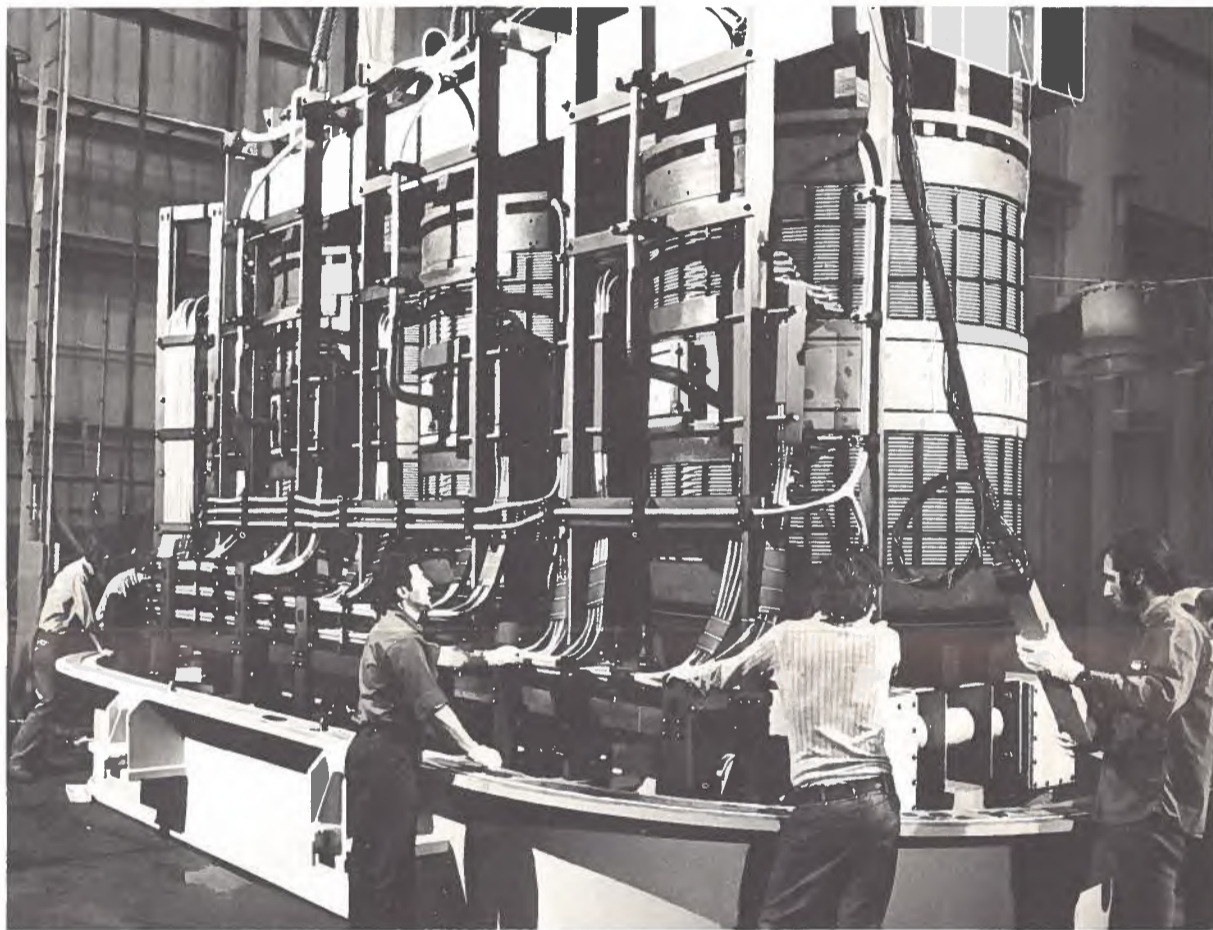
Federal Pioneer produces both dry type and liquid cooled transformers, particularly instrument current transformers, distribution — including pad-

mount — and power transformers.

A complete staff of fully qualified engineers is employed in the design, production and application of all products — many of which are custom designed to fit specific requirements and all of which are quality checked and tested at various stages of the manufacturing process.

Federal Pioneer's engineering and technical personnel are available to supervise erection and installation of major equipment prior to energization and acceptance. The company will also train customers' personnel in the correct operation and maintenance procedures.

Federal Pioneer products are operating in the United States, Britain, Australia, New Zealand, Thailand, India, the Caribbean and most countries of South America. Code 6-157.



Start of final assembly of three-phase power transformer at Federal-Pioneer's Winnipeg plant.

Fire fighters for rapid rescue

Vehicles that operate in off-highway conditions impossible for more conventional trucks and hard track units are designed and manufactured by Canadair Flextrac Ltd., Calgary, Alberta.

For fire crash and rescue requirements Canadair Flextrac offers tracked and wheeled vehicles with speeds up to 30 miles per hour (48km/hr.). This family of crash and rescue vehicles consists of the CF240FF, CF110FF, CF100TT and the CF300TT.

The CF240 FF, eight of which are in service in India, has a true maximum speed of 20 miles per hour (32km/hr.), features on and off runway capabilities and has large foam and water capacities.

With a proven climb ability of 60 per cent grade and a sidehill ability of 40 per cent grade, the vehicle is capable of delivering 1,400 imperial gallons (6,370 litres) of water, 140 gallons (637 litres) of foam concentrate and two 150-pound (68.1-kg) pressurized containers of dry chemical.

Foam is generated at the rate of 7,000 gallons (31,850 litres) per minute through the cab mounted monitor. The foam expansion ratio is 8.1, using six per cent protein foam. This agent may be dispersed through hand lines as well as through the cab mounted nozzle which throws foam 190 feet (58m).

A lighter and faster vehicle is the CF110 FF with a true maximum speed

of 30 miles per hour (48km/hr.) — yet with the same rough terrain capabilities as the CF240FF. This high capacity, three agent firefighting package also has cab mounted firefighting controls and rubber-padded grouser bars.

The CF100TT, with a 1,000-pound (454-kg) dry chemical unit, is typical of the vehicle used by the U.S. Army in Antarctica. Suitable for less severe conditions, it has a maximum top speed of 30 miles per hour (48km/hr.) The CF300TT, with the same speed, has a payload of 30,000 pounds (13,620kg).

All standard tools necessary to permit forcible entry into crashed aircraft are also part of the firefighting package. In many cases, the customer may have a unit built to specifications, provided they are within the payload of the vehicle.

Designed primarily for fires associated with airplane crashes, Canadair Flextrac's vehicles are also equipped with components for drawing water from hydrants or other external sources in the event of structural firefighting.

In addition to firefighting and tracked vehicles, Canadair Flextrac also makes a series of four by four and six by six vehicles equipped with appropriate terra-tires. The tracked and terra-tired vehicles are in the five, 10, 15, 22, 30 and 40-ton (4.5, 9.1, 13.6, 20, 27.1 and 36.3-metric ton) range. Code 6-332.



The CF240FF firefighting vehicle by Canadair Flextrac is designed primarily for combating fires at airplane crash sites. Capable of traversing extremely rough terrain, the three-agent — water, foam, dry chemical — firefighting package has a maximum speed of 20 miles per hour (32km/hr.).

Sturdy greenhouses for year-round gardeners

Flowers, fruits and vegetables are healthy and happy when raised in the do-it-yourself greenhouses designed and manufactured by Pecon Aluminum Ltd., Downsview, Ontario.

Constructed of durable aluminum alloy which will not rust, warp or rot and which requires no painting, the greenhouses can be easily erected and dismantled in only a few hours.

Engineered to withstand the snow and ice loads of the Canadian winter — while still allowing the maximum amount of sun in — Suntyme greenhouses are sturdy and durable without requiring dozens of nuts and bolts to steady the structure.

This is due to the "controlled stress" assembly system: all aluminum components slot easily into place, interlocking with neighboring sections. A quick snap of a tension clamp on each of 12 reinforcing rods firmly locks the components into a squared and solid structure via diagonal stress loads.

These stress loads, combined with the steeper, reinforced roof of the Suntyme, protect the greenhouse glass from such undesirables as heavy snow loading and ground heaving.

To enclose flowers, fruits and vegetables in healthy, draft-free security, the glass panes — which come already cut to size — are easily sealed with soft vinyl weather stripping. Special glazing clips snap into position with a simple flick of the fingers to hold all panes firmly against the aluminum frames.

The Suntyme greenhouse is versatile in other ways: accessories such as heaters, electrical panels or blinds can be attached anytime anywhere by simply drilling a small hole in the frame's specially designed screw tracks and securing the extra equipment with a self-tapping screw.

In business since 1972, Pecon Aluminum is interested in exporting to such countries as Britain, Germany, Australia, New Zealand and the United States. Code 6-267.



Regardless of the weather Pecon Aluminum's do-it-yourself greenhouses are always in season. The 48-square-foot (4.5-m²) units are light, durable and easy to maintain. With an increasing demand for the greenhouses, the company is now planning to introduce 96 square-foot (8.9-m²) models.

Bulk materials easily handled

Sullivan Strong Scott Inc., a leader in the design and fabrication of bulk handling equipment, will keep your product moving.

A Toronto, Ontario, company founded in 1946, Sullivan Strong Scott maintains an extensive inventory of components for screw conveyor, bucket elevators, ribbon, paddle and continuous dry mixers, drag conveyors and pneumatic conveying systems.

One of Canada's largest suppliers of bulk handling equipment for the agriculture market, the firm specializes in the design and manufacture of components or complete systems for the grain, cereal and feed handling and processing industries. Specialty products include storage systems, conveying, elevation, grinding, mixing and pelleting equipment.

Other company products include both horizontal and vertical screw conveyor

systems up to a 16-inch (40.64-cm) diameter in helicoid and up to a 46-inch (121.92-cm) diameter in sectional. Ribbon conveyor screws in carbon steel, stainless steel or other alloys, plus special screws with custom pitches or flights, are also manufactured.

Complete components including motors, reducers, troughs, hangers, couplings, bearings and discharge chutes are continually stocked.

Various types of chain conveyors are manufactured with capacities up to 50,000 cubic feet (1,415 cubic meters) per hour. And through its pneumatic conveying division, the firm offers airlocks, blowers, fans and cereal processing equipment.

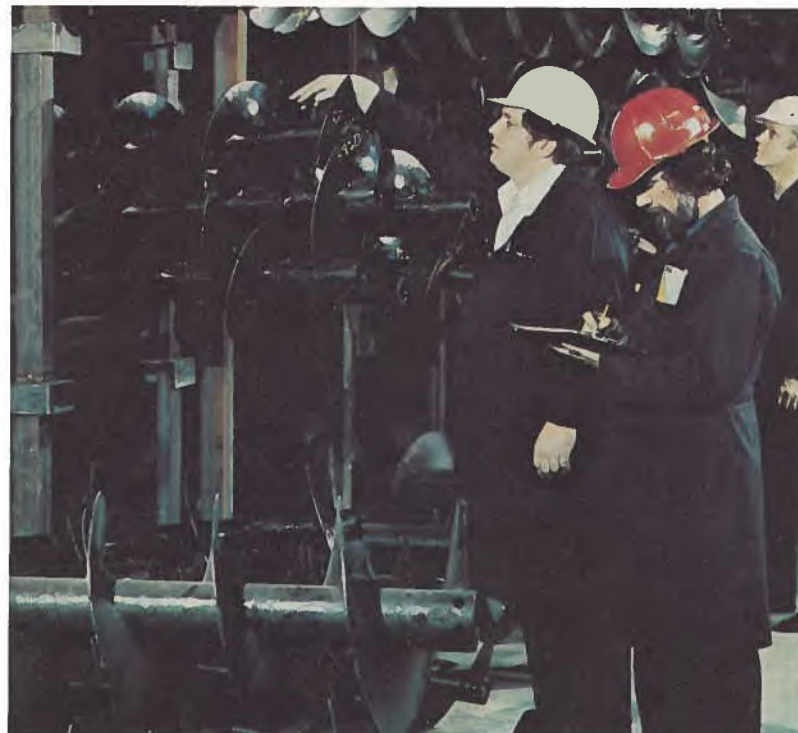
Bucket elevators are another company product manufactured to handle all types of materials. The buckets, constructed of carbon steel, stainless steel

or plastic are available in all sizes and styles.

Highly-skilled engineers and draftsmen from Sullivan Strong Scott will also design equipment for the pulp and paper, chemical, cement, mining or food and beverage industries. All engineering services and manufactured stock are available through the company's offices in both Eastern and Western Canada. The manufacturing plants and design services are telex-linked for maximum speed and efficiency.

Sullivan Strong Scott is seeking international markets and will supply designs and equipment for either a fully integrated operation or for specific applications. Supervision of installation on site can also be provided by the company's senior consultants.

Code 7-131



These men are examining an inventory of screw conveyors in one of Sullivan Strong Scott's regional warehouses. Always ready for immediate delivery, these conveyors are only one of the many products made by this Canadian-owned supplier of equipment for bulk handling and processing.

Canada at Europort 75

Carrying a full cargo of marine expertise, Canada will return to Amsterdam this fall for Europort 75.

Ten Canadian companies will participate in the exhibit sponsored by Canada's Department of Industry, Trade and Commerce.

Europort 75 is being held November 11 to 15 at Amstel Hall, Amsterdam, The Netherlands.

Last year was the first time Canada manned a national exhibit at Europort and it was a very successful venture for all those participating.

Europort, the largest show of its type, attracts annually more than 1,500 exhibitors from more than 45 countries. The show features, among other things, the newest innovations in ship building and marine engineering.

World merchant ship fleets have continued to expand dramatically over the past ten years and this demand for larger, faster, more specialized ships has resulted in Canada's shipbuilding industry experiencing a high level of activity. At the present time, Canadian shipyards have orders booked that exceed one billion dollars.

Annually, Canada's shipbuilding industry accounts for approximately a half billion dollars with approximately 40 per cent of new construction sales related to export ships.

Experienced in building many types of vessels — carriers, tankers, ice-breakers, fisheries vessels and general purpose cargo vessels — Canadian yards have developed new designs to meet current shipping requirements.

The yards have received a number of multi-ship orders, many from repeat customers — a sure sign of customer satisfaction.

Canada is proud of the continuously refined technology and innovative developments in its marine industry. Following is a list of the Canadian companies participating in Europort 75:

AIRPAK Limited/AIRPAK Limitée, Ville St-Pierre, Quebec — The FRP (plywood) dry cargo and insulated container that meets T.I.R. and I.S.O. standards. Approved for nine high stacking, its heavy gauge steel frames and rails are coated with a zinc rich paint that carries a three-year bonded warranty.

Canadian Marconi Company (Avionics Division), Montreal, Quebec — The CMA — 722, an accurate all-weather, world-wide position fixing system for maritime shipping that makes fixes without the use of maps or charts.

Canadian Shipbuilding and Ship Repairing Association, Ottawa, Ontario — Membership consists of 19 shipyards and 19 affiliate members including producers of electrical and electronic equipment, diesel engines, prefabricated sections, ship designers, and research, development and ocean engineering companies.

Galt Equipment Limited, Canadiac, Quebec — Complete refrigeration and air conditioning systems constructed in factory built modules for rapid, low cost shipboard installation.

German + Milne, Montreal, Quebec

— Ocean engineering, structures, machinery installations, electronics and communication devices are all part of this firm's expertise. Additional services provided include marine surveys, vessel deliveries and feasibility studies.

John T. Hepburn, Limited, Toronto, Ontario — The Hepburn Blowout Preventer (B.O.P.) crane, for easy, quick assembly on oil rigs. Hydraulically-operated, the bridge-type crane is controlled by one operator from a deck-mounted console.

J. Kobelt Manufacturing Co. Ltd., Vancouver, British Columbia — A non-corrosive line of pneumatic and mechanical remote control systems for marine propulsion and deck machinery with a high standard of performance.

Stephens-Adamson (Division of Allis-Chalmers Canada Limited), Belleville, Ontario — The company provides the design, research, manufacture and service for bulk material handling systems for self-unloading vessels including the new loop belt elevator system.

Wagner Engineering Ltd., Vancouver, British Columbia — Type L2 electro-hydraulic steering gear with a patented full follow-up Accuometer control valve system.

Western Machine Works Limited, Vancouver, British Columbia — A designer and manufacturer of marine towing equipment, Western Machine Works produces a compact unit incorporating hydraulic tow pins, cable hold-down block or hook and stern roller. Code 7-264



An excellent example of Canadian expertise, this harbour tug was designed by German + Milne for Quebec Cartier Mining Company. The tug, one of two built, is specially designed to handle large iron-ore carriers in restricted harbours with heavy ice cover in wintertime. Christened the Brochu, the tug is 100 feet (30.48 m) long, by 36 feet (10.97 m) wide, by 14 1/2 feet (4.4 m) deep. Its installed power is 3,600 shp and it has diesel driven twin screw Voith Schneider propellers. Code 7-364.

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FURS IN FASHION!

Canadian fur exports are expected to reach a record value of \$40,000,000 in 1975 — a reflection of the fact that Canadian furs continue to be rated among the finest in the world.

In this business, much depends on the skill of the worker rather than the capability of the machine — and Canadian craftsmen pride themselves in attention to detail, following designs that enhance the quality of the furs.

This year the designs are many and diverse, ranging from classic elegance to cleverly worked geometric zig-zags, checkered, triangle, striped and oval patterns. Some furs are also dyed in fun

colours of copper, forest green, peach, gold and flamboyant red; hemlines that graze the calf or dust the floor; and innovations such as capes and coats.

In the spotlight are long-haired furs like Canadian lynx, raccoon, and Canadian wolf, along with mink in all its variations, including Canadian majestic, black cross and demi-buff.

Other furs include Alaska seal, Canadian beaver, smooth, velvety Swakara, ocelot, nutria, chinchilla, sable, borego, kolinski and muskrat. In all, the most popular length reaches the calf.

Collars too are undergoing change

though they are primarily notched or tuxedo style and, like the cuffs, are frequently dyed to match. This is particularly evident in fox. Sleeves generally have a looser look, widening slightly at the wrists.

For men, who are becoming increasingly fur conscious, the accent is on long-haired furs like wolf, raccoon and otter. Mink and muskrat are also gaining prominence. With details more subtle and colours less flamboyant than those for women, the variety of designs indicates that for men too, furs are here to stay.



Luscious, sable-wrapped coat with tuxedo collar by Natural Furs Ltd. (Code 8-167). On right, leather-belted beige fox coat with rolled back cuff and shawl collar by Gilles Allard Fur Studio. (Code 8-267)



Double-breasted, leather-sashed wolf coat (left) by Thrift Furs Inc. (Code 8-367). Centre features a leather belt on raccoon coat by C. Leclair Fourrures et Fils Ltée (Code 8-467). At right, also by C. Leclair Fourrures, is a light wolf coat cut below the knee. (Code 8-567)

Designed for warmth

The problem of what to wear to work when the temperature is -46°C (-51°F) has been solved by an Edmonton company, Outdoor World Products Ltd.

The Alberta-based firm specializes in the manufacture of warm but light clothing for extremely cold climates. Established in 1974 to fill the needs of people working in the Arctic, Outdoor World offers a line of high quality down-filled clothing and sleeping bags that is also extremely popular with the recreation trade.

Parkas, jackets, vests, cardigans, overalls, socks and mitts, all give the outdoorsman "uncompromised comfort" since only 100 percent prime down is used with a loft of over 550 cubic inches (9015cm^3) per ounce (28.4 grams). Down is one of the lightest and finest insulation materials available: it breathes, can be compressed and is washable or dry cleanable.

Unique among Outdoor World's products is a down-insulated hard hat liner that is available in three models.

The liners, made of 100 percent ripstop nylon, feature velcro closures. All models fit both four and six strap hard hats and come in red, royal blue, brown, green or light navy.

Model 0005 is short with elastic, model 0006 for blizzards has a longer neckline and chinstrap, while 0010 for

the Arctic has a full dickie and works well with breathing apparatus.

Another important product the company is developing for welders is a special outfit that is lightweight and warm yet able to withstand showers of hot sparks and days of kneeling, crawling and snagging.

And for welders, riggers, snowmobilers or anyone with cold feet, filled booties with cordura-nylon soles are the ultimate footwarmer. Available in assorted colours and sizes small, medium, or large, the booties can be worn either as boot liners or camp slippers.

Sleeping bags come in six lightweight styles for easy storage. The warmest bag is filled with $3\frac{1}{2}$ pounds (1.6 kg) of down, but weighs less than 6 pounds (2.7 kg), and will fit into a 9 by 21-inch (22.7 by 53.3-cm) sack. Where light aircraft regulations require one sleeping bag per passenger as part of survival gear, Outdoor World's compact sleeping bags allow, on a 15-passenger plane, for 300 pounds (136 kg) more payload than on the same plane equipped with other sleeping bags.

The company also manufactures ear bands, gauntlet-style mitts and two-piece underwear. Custom designs or special sizes can be made on request.



Keeping warm at -46°C (-51°F) is no problem if the clothing you're wearing is from Outdoor World Products Ltd., of Edmonton, Alberta. The Northwind jacket and parka worn by company president, John From, is ideal for work or play when the temperature dips below -18°C (0°F). Down insulated throughout the body and sleeves, it is generously cut and has raglan sleeves for freedom of movement. The collar, pocket and hood are also down-insulated, with a wind tunnel and fur ruff on the hood.

Code 8-824.



Black mink, self-sashed coat by Ricky and Ingo Fur Originals Inc. (Code 8-667). Geometric patterns are a feature of the black cross-mink coat by Amsel & Amsel Inc. (Code 8-767)