

CPD 1970 Long Range Plan

LONG RANGE OBJECTIVES AND STRATEGY

DIVISION:

ENTER SIGNIFICANT NEW MARKET AREAS NOT NOW SERVED BY
EXISTING OPERATIONS.

We are working on the internal development of structural panels, cladding and roofing products for housing based on Permadeck, vermiculite, Bituthene and other existing products and technology, and are investigating the possibility of licensing other technology or products as they become available, such as Foam Form.

The major new market area to be entered is residential building. We are working both with HUD directly in its Operation Breakthrough and with builders who have contracts to erect housing under HUD programs such as Cost Effective Housing in an Improved Contemporary Environment (CHOICE) and will also work through conventional channels of distribution when the products and systems are developed more fully.

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Other new market areas we are considering entering include the consumer home and garden market in which we have test marketed Redi-Earth for the past four years. We plan to investigate the possibility of selling a broader line of products to this market to increase our sales efficiency and keep expenses at a satisfactory level with volume. We are also beginning to do development work on an insulated roofing system that would use Dyfoam and a variation of Bituthene, which if successful would give us a proprietary product for the roofing market that would complement our present roof deck and insulation products.

2. UNDERTAKE A MAJOR ACQUISITION PROGRAM.

We are identifying areas of the construction market that have above average growth potential and good margins and are identifying the leading companies in these areas. We will coordinate evaluation of acquisition opportunities that come up independently with this overall evaluation of acquisition possibilities. We plan to suggest areas for possible additional investigation by ICG.

objective:

TO CONTINUE TO BE THE LARGEST SUPPLIER OF VERMICULITE
ORE, EXPANDED VERMICULITE, AND VERMICULITE PRODUCTS FOR
EVERY PURPOSE

This is a very general objective and the strategy to
achieve it is woven in with several of the objectives
to follow. We have stated it as a separate objective
because it represents the foundation on which the business
is built, and - while other products have been added -
vermiculite is still the nucleus of the business.

We will continue -

1) To look for new vermiculite deposits, with partic-
ular emphasis in the eastern part of the United
States; our objective is to locate proven reserves
and acquire control of such reserves in sufficient
amount to warrant another Eastern mining and milling
operation, similar in size to our present Kearney,
South Carolina operation.

2) To extend the life of our present reserves, finding
ways to utilize lower grade ores now being discarded
and balancing the output of the mines with market
requirements; and

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3) To find new uses for vermiculite.

2. TO EXPAND VERMICULITE ORE MINING AND MILLING FACILITIES TO MEET INCREASING SALES REQUIREMENTS WHILE IMPROVING PROFITABILITY OF THE LIBBY MINE IN ORDER TO TAKE MAXIMUM ADVANTAGE OF DEPLETION ALLOWANCES.

Continue ore drilling and sampling program at Libby, Montana, mine as well as in Eastern U. S. areas.

Define expansion plans for mine and mill facilities.

Continue program to reduce unit mining cost. Increase average ore selling prices at Libby from the \$18.44 per ton in 1967 to \$23.00 per ton by 1972 by producing higher quality concentrate on which higher prices can be based and finding new uses for vermiculite that will command higher prices, such as in fire-resistant composites.

3. TO UPGRADE ZONOLITE MANUFACTURING PLANTS AND CONSOLIDATE AND/OR ELIMINATE AS MANY AS ECONOMICALLY DESIRABLE.

Plants in poor condition are being replaced or consolidated with other locations, or eliminated.

4. TO BECOME THE SUPPLIER OF THE WIDEST VARIETY OF INSULATION MATERIALS AVAILABLE TO THE BUILDING CONSTRUCTION INDUSTRY.

Great emphasis continues to be placed on the "Insulation Service Center" concept which promotes building material dealers carrying the full line of Zonolite insulation materials: Attic Insulation, Masonry Fill, Glass Fiber and Polystyrene.

F products and installation techniques will be developed to increase the variety and use of Zonolite insulation products available to the dealer and to the entire construction industry. For example, Zonolite plans to add other foam materials to its line, and has developed equipment for use in insulating existing masonry walls with Zonolite Masonry Fill and is involved in setting up a national network of applicators.

5. TO DEVELOP ZONOLITE'S POSITION AS A SUPPLIER OF A WIDE VARIETY OF SPECIALTY ROOF DECK MATERIALS AND SYSTEMS.

We acquired the "DRI-PAC" system - an asphalt-perlite roof deck line early in 1967. This product, together with the mineralized wood fiber roof deck line obtained

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with the Concrete Products acquisition on December 31, 1966 gives Zonolite two new roof deck products. In addition, Zonolite has developed a polystyrene Vent Board for use with Zonolite's present concrete roof deck systems. Vent Board is being marketed through Zonolite's network of Approved Roof Deck Applicators. We are marketing mineralized wood fiber roof deck materials through Zonolite's network of approved applicators. We have started a research and development program on an insulated roofing system using Dyfoam and a modification of Bituthene.

6. TO FURTHER DEVELOP ZONOLITE'S POSITION AS A SUPPLIER OF LIGHT-WEIGHT CARRIERS TO THE AGRICULTURAL AND CHEMICAL INDUSTRIES.

Increase promotional and educational efforts with leading producers and manufacturers of fertilizers and agricultural chemicals working closely with the Ag-Chem and Davison groups.

Expand the marketing of "Redi-Earth" (a combination of peat moss and vermiculite). Eight test markets were explored during 1966 to 1969. Based on our

experience, we feel this is a good potential market. Increased emphasis is planned for 1970 with the possibility of adding related consumer home and garden products. National promotion of a consumer item such as Redi-Earth involves heavy investment in advertising and sales personnel. Demolite will continue to "feel its way" and will endeavor to interest other companies with established distribution to sell Redi-Earth on a prime label basis.

7. Dyfozun
(from Geo. Bankel)

8. TO INCREASE SALES OF PERLITE AND PERLITE-BASED PRODUCTS TO \$2.0 MILLION BY 1971. (SALES IN THE FIRST FIVE MONTHS OF 1969 WERE RUNNING AT THE ANNUAL RATE OF \$1.0 MILLION.)

In January, 1967 we purchased rights and know-how to an asphalt-perlite roof deck product ("DRI-PAC") and later in the year installed a perlite expanding facility in our Trenton, New Jersey plant.

With the experience we have gained at this installation, we plan to extend the process to other areas of the country using existing plants and, where possible, existing perlite furnaces. We have promoted one of our architectural representatives to be DRI-PAC Product Manager. Horticultural perlite applications, which offer a second major sales potential, are the responsibility of the product manager who handles Redi-Earth.

9. TO DEVELOP AND MARKET NEW PRODUCTS

The research effort within the Construction Products Division has been redirected to include more projects in the Zonolite area. We are currently investigating

five major possibilities as described in the "Major Opportunities" section of this plan. We will continue to look for new product opportunities in the Zonolite area and will also utilize our combined technology where appropriate.

C. Rock Processing Chemicals:

1. TAKE STEPS NECESSARY TO MAINTAIN OPTIMUM POSITION WITH PRESENT PRODUCT LINES.

We have developed a new generation of grinding aids, DDA-7, which we plan to introduce commercially in the second half of 1969. The DDA-7 product gives superior performance at equivalent cost per pound, improving the use-cost.

We are currently working on a new grinding aid, DDA-8, with which we plan to supplement DDA-7 to further regain control of the market vs. the presently lower priced competitive products that have been active during the past several years. DDA-8 is designed to reduce the cost per pound at the same level of performance as DDA-7, further improving the position of the cement mill. We have filed and are pending patents on both DDA-7 and DDA-8.

2. UTILIZE THE RPC TECHNOLOGY AND MARKETING CAPABILITY
TO ENTER NEW MARKETS.

We have studied the mineral processing industry to identify potential users of our dry dispersant grinding aid products and have found several possible users with small sales potential but good margins on simple modifications of present products. We are continuing to study taconite, and will begin an evaluation of bauxite, both of which may have comparatively large sales potentials for existing type products. We plan to make a further study of the mineral processing industry for possible non-grinding aid applications of our present technology, such as flowability, and for the possibility of our selling products based on related but broader technology, particularly wet grinding. Our studies to date indicate that outside the cement industry wet grinding is more common than dry grinding. Wet and dry grinding are fundamentally alternate methods of achieving the same objective so that our technical sales people can move into the new field relatively easily.

Darex, Horn and Servicised:

1. DETERMINE A COURSE OF ACTION TO 2. THE HORN AND
SERVICISED PROBLEM AND CARRY IT

We do not yet have the answer to the Horn and Servicised problems of inadequate profit return. Finding a satisfactory solution is the major assignment of the management people responsible for these items.

2. INCREASE PENETRATION OF THE CONCRETE MIXTURE MARKET.

We are planning to increase our R&D effort and strengthen our marketing with the following steps:

- (a) Complete the acquisition of the remaining three U. S. distributors.
- (b) Undertake development of higher performance, low dosage water reducers and retarders, to sell at the same or a lower use-cost as present admixtures.
- (c) Assign full time Darex salesmen to five major cities - New York, Philadelphia, Boston, Chicago and Detroit. These men will cover 80 per cent of the concrete applications written in the United States.

- (d) Expand the areas in which we make bulk deliveries to all major market areas.
- (e) Assign a dispenser equipment specialist to each District.
- (f) Make a major increase in our sales efforts directed toward the largest ready-mix producers, including direct calls by management people; technical seminars; and targeted calls by field salesmen. For ready-mix companies who have several product lines, we will use our Horn and Serviced salesmen for a combined approach to increase their incentive to take on our line.
- (g) Increased sales training of specialist salesmen assigned to sell to the entire concrete product industry (ready-mix plus producers of curb, block, concrete pipe and precast/prestress concrete panels).

3. OBTAIN MAXIMUM SALES GROWTH ON BITUTHENE.

The following are key elements of our action program on this product:

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(a) Continue to bring in standard Bituthene (10 mil PE) from Servicised Ltd. through at least 1970, projected capacity for which is adequate. Begin self-manufacture in one location in the United States by the end of 1970, in order to increase margins.

(b) Complete the development of a formulation for self-manufacture, using ground rubber in place of liquid latex, based on our Paraplastic technology. At the same time, we will also investigate the possibility of using a cold process instead of a hot process, with the objective of simplifying the manufacturing method, eliminating the wrinkling problem and reducing manufacturing costs.

(c) Expand the marketing effort as follows:

- Assign additional men to Bituthene specification work in key architectural centers;
- Hold architectural seminars on Bituthene throughout the United States and Canada;
- Undertake direct mail and space advertising on Bituthene directed to specifiers;
- Undertake continuing training of the general sales force in the special aspects of selling Bituthene;

- Maintain warehouse stocks of Bituthene in our regional plants and other key locations to support sales both direct to users and to distributors, which will vary by area and with the size of the user.

(d) Investigate other applications for Bituthene type products, including roofing, pipe wrap and bridge deck waterproofing. We will undertake development work on the best possibilities.

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CMD 1970 Long Range Plan

MAJOR PROBLEMS AND OPPORTUNITIES

Major Problems

A. Division:

1. The Cambridge staff, operating management and research groups have not in the past been organized or staffed to undertake significant internal development projects that would involve both Zonolite and CMD operations jointly. The organization problem has been solved with the combining of Zonolite and CMD but the staffing problem remains. Our research and product management groups lack experience in residential building and field applications knowledge from a systems building point-of-view.
2. The Division is not yet adequately staffed to explore and evaluate related new areas of construction for a major acquisition program.

B. Canada:

1. Sales volume is not adequate to provide a satisfactory return on investment and the existing product lines do not have good growth prospects.

In Eastern Canada, the sales organization needs further strengthening. There is severe price competition on Darex admixtures in this area.

In Western Canada, the product line includes a number of low margin items that are bought outside for resale. Also, sales are made largely in the three Prairie Provinces and are relatively small in British Columbia vs. the market potential of that Province.

C. Zonolite/U. S.:

1. We are presently at capacity on vermiculite milling in the United States. We need to increase the efficiency and output of the mine at Libby, Montana. Mining and milling costs at this location are high and processing practices are not efficient by modern mining industry standards.

We need to locate additional Vermiculite ore reserves in the eastern part of the United States.

2. Asbestos dust in the Libby ore creates an air pollution problem at the mine and in our expanding plants. We also have an asbestosis problem with ^{the} Monocoat, a fireproofing material which incorporates asbestos. The product is applied in the field by spraying steel beams. Asbestos is rapidly becoming recognized as a very serious health hazard.

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4. We have inadequate manufacturing facilities in a number of Zenolite areas. Some facilities are too small to be efficient and must be combined with others.

5. The competitive situation in polystyrene roofing is becoming more intense and margins per unit will probably decline on standard products.

5. In early 1969, Martin Fireproofing Company re-opened the wood fiber plant previously operated by the defunct Textured Products Company, increasing the competition on roof deck faced by Concrete Products.

6. Selling expenses are heavy and with the inflationary period we are going through it is difficult to offset these increases with volume and/or price.

7. There has been virtually no R&D on basic new products and inadequate R&D on the existing product lines.

8. There is a shortage of competent younger people (under 35) to move into key management positions.

D. Rock Processing Chemicals/U.S.:

1. Competition from lignin and chemicals producers has caused price erosion with some loss by us of both margin and volume on grinding aids, the major present product. This problem

could become more serious in the grinding and product line. Though we have found a number of possible applications outside the cement industry for our dry-dispersant technology, these have not been comparatively small. Several of the future potential markets are currently being investigated, but the chances of success are not known at this point.

Durez, Horn and Servicised/U.S.:

1. The Horn and Servicised product lines are mature, commodity type lines. We do not have sufficient sales volume to provide a satisfactory return on investment. Most of these products are comparatively unimportant or low interest items for architects. Some are "necessary evils" that architects would like to find ways to eliminate (for example the joints in concrete highways or decks that are eliminated by continuous steel reinforcing or by non-shrink cement). These product lines are not by themselves effective bases from which to grow by internal new product development. Expenses, particularly selling, are too high for the volume or type of item being sold. We do not yet have the answer to the Horn and Servicised problems and this is one of our major objectives.
2. The Chicago Servicised plant is a serious operating problem. Costs are too high and we have lost sales because of poor customer service. We also have capacity limitations. Also, at some of our other plants, we do not have adequate manufacturing capacity.

3. In the Darco admixture line, we face potentially serious price competition on water reducers and air-entrainers similar to that which has developed in the paint market. Our research has lagged behind that of our competitors in this area. We cannot expect a significant return on investment in a short-run solution, though we believe we have good longer-range new-product possibilities.

4. We face a possible application problem with Darco AEA (air-entraining agent) with which we have historically had a leading market share. A major customer in the Chicago area found that to achieve minimum strength requirements he needed to use more cement with AEA than with competitive vinsol resin type air entrainers. Our preliminary tests confirm this. We may have to change customers in some areas from AEA to Daravair, our vinsol resin base air entrainer, with a loss of \$100,000 to \$300,000 of gross margin.

Major Opportunities

A. Division:

1. Utilize the combined technical and marketing capabilities of the Division to develop significant new products and market them to new segments of the construction industry; for example, panels of Permadeck and of vermiculite for residential building, sprayed vermiculite/concrete wall systems with metal studs and lath, and Dyfoam/Servistik for roofing. HUD's current Operation Breakthrough and CHOICE programs provide an oppor-

tunity to enter the residential building market with the new products and will be used for this purpose by us.

B. Canada:

In Western Canada, Foam Form is a new product we are proposing to license in that area which provides an insulated, non-strapping form for poured concrete walls. It may give us major volume on a higher margin product. It will also give us an opportunity to install a plant at Edmonton for the combined manufacture of the new product plus self-manufacture of bead board, which is now purchased outside, and for the manufacture of other expanded polystyrene specialty products including Tufhide and Ventboard. The self-manufacture of the basic board and the addition of the specialties will significantly increase our margins. Finally, the market potential for Foam Form is large enough so that taking it on will enable us to increase our penetration of British Columbia.

C. Zonolite/U.S.:

1. The combination of smaller vermiculite plants with each other and with Dyfoam plants, and possibly in some cases with Horn/Servicised plants, will give us more efficient manufacturing and significant cost reductions.
2. Other significant cost reduction opportunities exist in improving the Libby operation, the use of more efficient vermiculite furnaces in the plants, and better control of shipments to reduce freight costs.

3. The Dyfoam technology and facilities can be used more effectively by the development of additional higher margin speciality products such as Turfide and Ventboard and possible extension of our Pacific Northwest and Southern California custom molding operations into other sections of the country.

4. New product opportunities exist in the Zonolite area, including:

- The possibility of developing a Monocoat^{11/2} type spray fireproofing with no asbestos to replace conventional sprayed asbestos fireproofing;
- New uses for vermiculite, such as a new French process for making panel board which we may license or an internally developed process for producing such panels;
- Permadeck modified for use in wall panels, and a second modification of Permadeck using wood flakes in the core to reduce costs and improve margins. A 100 percent flake type Permadeck with a different surface texture might be a possibility for new applications such as a better stucco base;
- Possible license of Foam Form in the United States, depending on its U. S. patent position. We expect to have an option on the U. S. and Puerto Rico;
- A spray wall using vermiculite concrete on wire lath and metal studs for a quickly erected, fireproof, low cost wall system.

5. Further penetration of the home and garden consumer market with Radi-Earth and the possibility of adding other products to the line.

D. Rock Processing Chemicals/U. S.:

1. Expand the scope of the Rock Processing Chemicals' research and development effort beyond its present emphasis on grinding aids and functional additives to work on basic cement improvement (e.g., non-shrink cement, which would overcome a major problem with concrete).

Also, apply existing RPC dry dispersant technology to selected non-cement industries and develop additional technology for these industries, especially where wet grinding is now used.

E. Darex, Horn and Serviced/U. S.:

1. Bituthene, with its installation labor saving aspect and its factory controlled quality, has the potential for a comparatively rapid penetration of the waterproofing market. The market for it will grow further as construction wage rates continue to increase and construction labor becomes in shorter supply. We expect Bituthene sales to reach \$3/4 million by 1971 and close to \$1-1/2 million by 1974.

CONSTRUCTION PRODUCTS DIVISION

1970 Long Range PlanPLANNING ASSUMPTIONS

Volume of new building and construction. In March, 1969, the Economics Department of F. W. Dodge/McGraw-Hill published U. S. construction market estimates for 1975 and 1980. These are summarized in the following table as our current working estimates. They will be revised if necessary when the Grace Business Economics Department publishes its new Economic Base for Planning.

Value of Construction Put in Place - U. S.

(constant 1967 dollars in billions)

	<u>Total</u>	<u>Heavy Constr.</u>	<u>Nonres. Bldgs.</u>	Sub-total: <u>Hvy. Constr. & Nonres. Bldgs.</u>	<u>Resid. Bldgs.</u>
1967 Actual	\$ 76.2	\$22.5	\$28.6	\$51.1	\$25.0
1975 Projected	107.4	34.2	31.8	66.0	41.4
Avg. Annual % Growth: 1967-1975	4.3%	5.4%	1.3%	3.3%	6.5%

Source: F. W. Dodge, Construction Market Outlook: 1980. March, 1969.

A more detailed projection, prepared by the Grace Business Economics Dept., follows. This is a copy of last year's chart and will be updated in our final 1970 plan.

(See table on following page.)

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2. We expect construction in Canada will continue to grow roughly at the same average long term rate as in the United States, and that the Canadian market will continue to equal approximately 10 percent of the United States market.
3. Present construction needs are not being met in the United States and the basic unfilled demand is growing. This is especially true of housing and the related areas of water and sewage facilities, highway and transportation facilities, schools, shopping centers and certain other non-residential building. For construction activity to increase to the potential represented by basic demand will require political settlement of the overseas commitments of the United States, especially in Viet Nam, which is necessary to increase the supply of money. Meanwhile, in the short run, actual construction levels may fall below the average annual growth rates projected by F. W. Dodge.
4. There will be continued increases in construction wage rates and increasing shortages of some construction trade labor. This will increase the incentive to shift to materials and systems that require less on-site labor.
5. There will be some increase in materials prices, but probably not fully commensurate with increased costs. Competition will generally remain heavy until the construction industry begins to grow on a strong, sustained unit volume basis.

6. There will be a partial acceptance by labor of the use of pre-fabricated components, accomplished slowly on a local or regional basis. In some if not all cases, this will be coupled with union organization of the pre-fabrication shop, typified by the settlement earlier this year along these lines between Stirling Homes Corp. and the carpenters' union in Avon, N.Y. The effect will be to raise the cost of components somewhat at the factory but to facilitate their increased usage on-site.

7. In the nonresidential segment, the use of pre-engineered metal buildings will continue to grow at a rate roughly double the industry average. In the residential building segment, there will be continued experiments with sectionalized houses and fully prefabricated housing units, but no approach so far tried represents a final answer to rapidly erected, lower cost housing. Developments in land acquisition, site development and financial planning will be more important in providing housing than technological changes alone. The major companies involved in the residential segment of construction will probably be building conglomerates with control extended to all key aspects of providing housing, from site control through financing of the final sale.

8. The "Systems" approach to design and construction is a matter receiving a large measure of attention by the design professions and the manufacturers. Basically, the systems approach is to present methods of combining two or more products for the design and builder profession to serve a major function. Example -- complete wall systems, roof systems, etc. Development of this concept reduces time lag, lowers costs, improves profits. Awareness of the possibilities and savings is in the embryo

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stage. We expect that there will be some increase in the use of industrialized building systems involving precast concrete, especially for multi-family housing. However, we do not believe that this will gain widespread, general acceptance as it has in the more socialized European countries; the building industry in the United States will retain many aspects of its more fragmented structure.

9. We expect no major increase or decrease in the relative amount of portland cement concrete used in new building and construction. This has averaged close to 60 barrels of cement per thousand dollars of new construction put in place (constant 1957-1959 dollars) during 1960-1963.

Board of Examiners
Special Meeting - Asbestos Hazards
Minutes of Meeting
July 21, 1970
Page Two

He concluded:

1. Asbestos fibers in sufficient dose cause diseases.
2. It is not known how low a dose is.
3. Many bodies (other minerals, asbestos) can cause hazard. To sort them out.
4. Asbestos exposure must be reduced.
5. Dr. Cooper is working on study to define safety controls in asbestos industries.

(TAPE 1120)

Dr. Selma Dritz, San Francisco Department of Health, defined the presently existing methods of preventing further spread of severe asbestos-caused diseases, and urged that necessary steps be taken to control the

(TAPE 1140)

Mr. Douglas Fowler, University of California Berkeley, cited measurement of number of fibers in ambient air at different locations near a construction site using asbestos. Measurements are stated in time-weighted average over an 8-hour day. He submitted copies of "Asbestos Fiber Concentrations in Air During Fireproofing Operations Using Zonolite" by Tabershaw-Cooper Associates, dated 1969.

(TAPE 1200)

Mr. John Fisher, American Institute of Architects, cited use of insulating materials during construction with no knowledge of the existence of asbestos. He stated that measurement of fibers in air of a completed building has been made (Bechtel Building).

(TAPE 1230)

Mr. Goldberg asked for source of the fibers per milliliter.

Dr. Cooper stated source was textile, particularly in England. He considered 100 per liter as high, 1000 per liter as medium, and 100 per liter as virtually undetectable.