Project B-209

FABRICATED RUBBER PRODUCTS

A Manufacturing Opportunity in Georgia

Prepared for

The Georgia Department of Industry and Trade
Jack Minter, Director
100 State Capitol
Atlanta, Georgia

by

George W. Morris, Jr.

Industrial Development Division
Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
August 1963

Table of Contents

Foreword

This is the ninth in the current series of special product and industry studies being prepared for the Georgia Department of Industry and Trade by the Industrial Development Division.

Unlike some of the others, this one does not reveal a significant transportation cost saving. Rather, production labor costs, fuel rates, the cost of electricity and taxes provide the major cost advantages for a fabricated rubber products manufacturer locating in Georgia.

Additional information which an individual company may require to evaluate its particular location situation will be provided by the Division's staff on a confidential basis upon request. Questions and comments on the study are invited.

Kenneth C. Wagner, Chief
Industrial Development Division
GEORGIA INSTITUTE OF TECHNOLOGY

Summary

A producer of fabricated rubber products can expect between 60% and 100% more profits from a plant in Georgia than from a plant in any of the major producing states.

A company with sales of $4.4 million a year can expect savings in labor costs of between $200,000 and $400,000 a year, as well as smaller savings in fuel costs, in the cost of electricity, in taxes, and in capital investment.

In the fabricated rubber industry, value added by manufacture per dollar of wages paid is $3.76 in Georgia, whereas the highest figure in the Northeast is $2.81 in Massachusetts. In Ohio the figure is only $2.22. This means that a Georgia manufacturer can expect to get a dollar or more extra value for each dollar of wages paid than he can receive in the northern plants.

Principal factors to be considered in deciding upon the location of a new facility are production labor costs, fuel rates, the cost of electricity, and taxes. A Georgia plant would benefit from advantages in each of these areas.

Freight cost, a minor item in the production and distribution of fabricated rubber products, is not a significant location factor in the industry. Actually, any freight disadvantage of a Georgia location would be more than made up by savings in any one of the utilities.

If present growth trends continue, there will be a need by 1965 for additional fabricated rubber plants to serve the national market, particularly for those which would manufacture rubber hose and other rubber goods.

INTRODUCTION

The manufacture of fabricated rubber products is presently concentrated in the northeastern section of the United States, particularly in the states of Ohio, Massachusetts, and New Jersey. (See Map 1.) This report considers the feasibility of producing certain of these fabricated rubber products in Georgia.

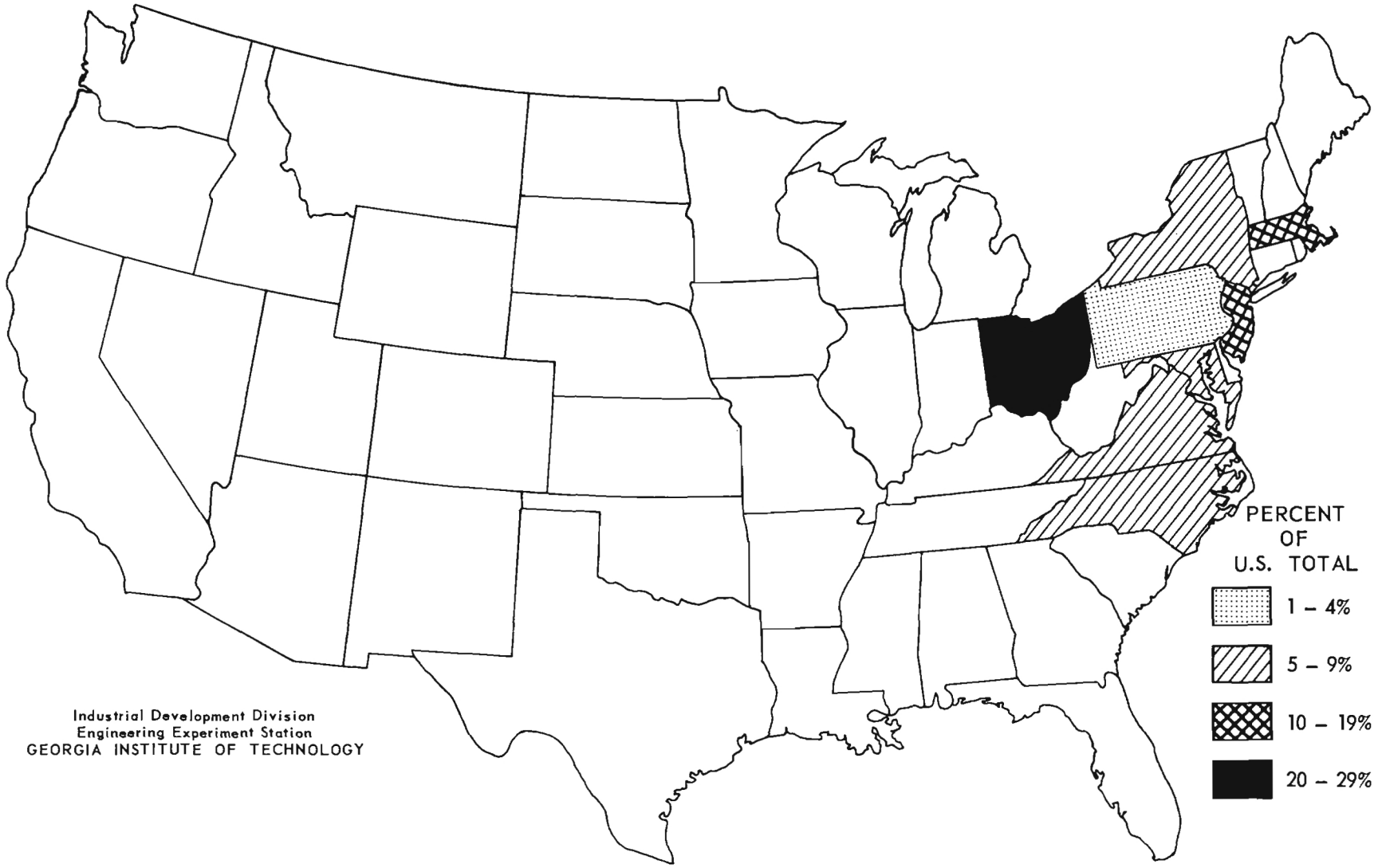
In this report, the term "fabricated rubber products" refers to those items which are classified by the Office of Statistical Standards as "fabricated rubber products, not elsewhere classified (n.e.c.)" and coded as Standard Industrial Classification (SIC) 3069.[1/] Included in this classification are rubber belts and belting, rubber hose and tubing, sponge and foam rubber goods, rubber floor and wall covering, miscellaneous mechanical rubber goods, rubber heels and soles, and other rubber goods.

Although most of the reported statistical data covers all of the products in SIC 3069, this report focuses on four groups of products which show the greatest potential for growth: rubber belts and belting, rubber hose and tubing, mechanical rubber goods, n.e.c., and other rubber goods, n.e.c. The group, mechanical rubber goods, n.e.c., includes battery jars, boxes, and parts; molded, extruded, and lathe-cut rubber products; jar rings; O-rings; packing; pressure sensitive tape; rolls and platens; tank blocks, treads, and band tracks; fuel cells; boats, pontoons, and life rafts; and other mechanical rubber goods. Included in the category, other rubber goods, n.e.c., are such products as rubber-coated fabrics, rubber clothing, rubber thread, and rubber cement.

1/ Standard Industrial Classification Manual, Executive Office of the President, Bureau of the Budget, Office of Statistical Standards, 1957.

MAP 1

VALUE ADDED BY MANUFACTURE - FABRICATED RUBBER PRODUCTS



THE NEED FOR ADDITIONAL PRODUCTION FACILITIES

Additional production facilities are likely to be needed in the fabricated rubber products industry within the next few years. Opportunities are particularly promising for the establishment of new plants to manufacture rubber hose and tubing and other rubber goods, n.e.c.

A quantitative trend for fabricated rubber products as a whole is difficult to determine because information on most individual products is not available, and the trend of the entire group has been adversely affected in the past several years through the change-over from rubber to plastics for some of the products included in the grouping. In addition, the U. S. Census Bureau changed its system of reporting in 1957. Nevertheless, the fact that shipments of fabricated rubber products have not shown a decline, despite the inroads of plastic products, indicates that the rubber products for which plastic is not a substitute have been experiencing satisfactory growth.

Total annual shipments of rubber hose and tubing, one of the few categories for which information is available over a period of several years, have had steady growth since 1954, increasing 50% in seven years to a dollar volume of over $225 million in 1961. The value of shipments of this group should increase by $40 million between 1961 and 1965. (See Figure 1.) Shipments of other rubber goods, n.e.c., should increase by $50 million by 1965. (See Figure 2.) By that time there very likely will be a need for a substantial number of new plants for the manufacture of other rubber goods, n.e.c., and rubber hose, as indicated in Table 1.

Table 1

FORECAST FOR MANUFACTURE OF RUBBER HOSE AND TUBING AND OTHER RUBBER GOODS, 1961-1965

	Rubber Hose and Tubing	Other Rubber Goods, n.e.c.
Total annual shipments of average-size plant (1958)	$ 4,400,000	$ 1,300,000
Increase expected in annual shipments between 1961 and 1965	40,000,000	50,000,000
Number of average-size plants required to produce expected increase in output	9	38

FIGURE 1

TREND OF TOTAL ANNUAL SHIPMENTS OF
RUBBER HOSE AND TUBING

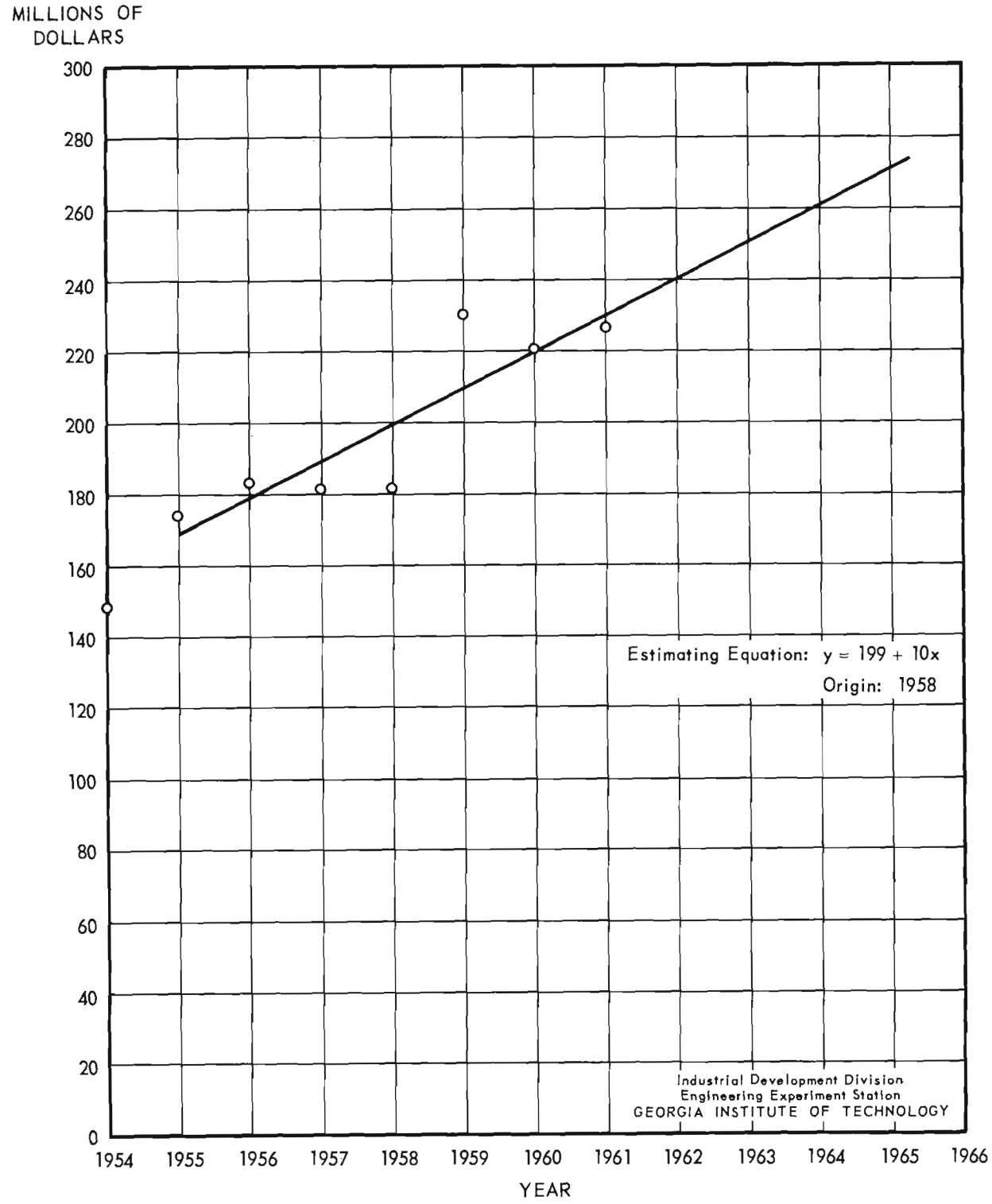
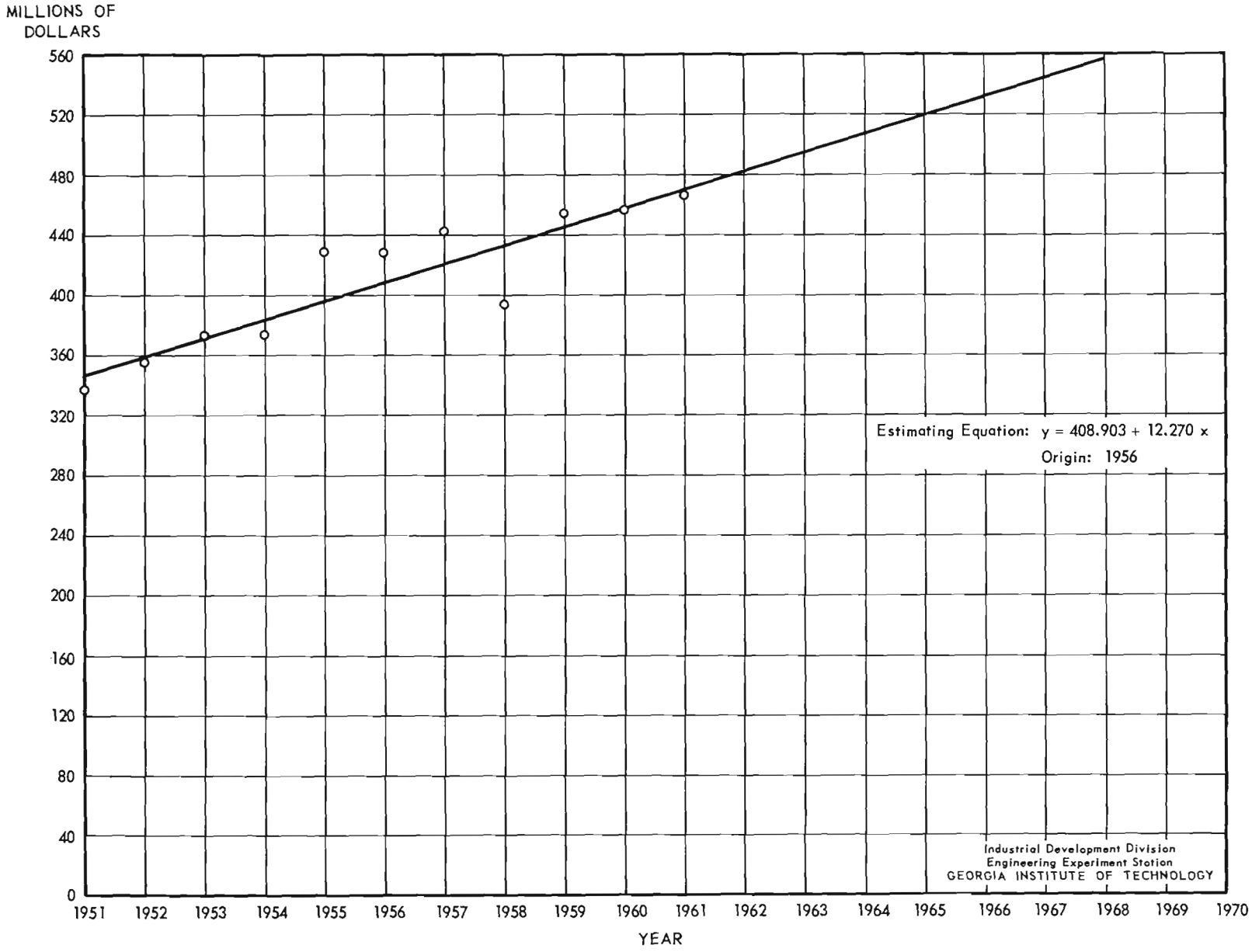


FIGURE 2

TREND OF TOTAL ANNUAL SHIPMENTS OF OTHER RUBBER GOODS, N.E.C.



Rubber belts and belting and some products in the miscellaneous mechanical rubber goods category have shown an increase in shipments which probably will continue through 1965. Miscellaneous items include battery jars, boxes and parts; O-rings; packing; and rolls and platens. Sufficient annual data on these products are not available to compute a statistical trend which would allow a quantitative prediction of future shipments for these products individually, but good growth is indicated.

LOCATION FACTORS

The principal considerations involved in the selection of a geographical area in which to locate a new plant for the manufacture of fabricated rubber products are the costs in the areas under consideration of production labor, fuel, electricity, and taxes.

Table 2 indicates the relative importance of various controllable costs as percentages of the value of shipments for the fabricated rubber products industry (SIC 3069). Since shipments of the categories of products examined in this report (rubber belts and belting, rubber hose and tubing, mechanical rubber goods, n.e.c., and other rubber goods) account for two-thirds of the shipments of this industry, the percentages should be applicable to these categories.

Table 2

RATIOS OF INDICATED MANUFACTURING COSTS TO SHIPMENT VALUE OF FABRICATED RUBBER PRODUCTS

Manufacturing Costs	Per Cent of Shipment Value
Production wages	21.0
Electricity	1.0
Fuel	0.8

Source: U. S. Census of Manufactures

Since net profit before taxes for the manufacture of rubber and miscellaneous plastics products (including products covered in this report) ranges from about 6.0% to 8.5%[1/] of sales (or shipment value), a sizable reduction in any of the above costs would significantly affect the net profit of a concern. This is particularly true of production labor costs. Therefore, companies interested in locating new production facilities will consider the relative costs of these categories in each geographical region under study.

1/ Quarterly Financial Report for Manufacturing Corporations, Federal Trade Commission--Securities and Exchange Commission, 1961 and 1962.

The size of the regional market is not a primary consideration because freight usually is a minor cost factor compared with other costs. In the distribution of rubber belting, for example, the freight cost to the customer represents an insignificant percentage of the total cost. Appendix 1 compares the freight costs for shipping conveyor and elevator belting from various plant locations to the major wholesaling centers in the U. S. From all points of origin but one (Los Angeles), the total freight cost amounts to less than one per cent of the sales price. There obviously would be no reason to attempt to manufacture the product for a regional market in order to lower the price of the product through reducing the customer's freight expense. The maximum saving in freight cost probably would not amount to more than one-half of one per cent of the sales price.

Most major producers of rubber belting serve the national market from one or two large plants. In the production of rubber belting the capital investment is so large that the plant would have to sell nationally in order to have a sales volume large enough to justify the expenditure for the equipment. For the manufacture of other rubber products the investment varies considerably, but freight costs still are of little consequence. Although some manufacturers produce for limited market areas, the limitations usually are self-imposed because of problems in marketing.

Proximity to sources of raw materials generally is not a significant factor, since the freight cost for these items is a negligible part of the cost of the product.[1/] In many instances, the freight cost on synthetic rubber is paid by the shipper.

[1/] Appendix 2 lists the synthetic rubber producers nearest to Georgia.

ADVANTAGES OF A GEORGIA LOCATION

The principal advantages of a Georgia location for a fabricated rubber products plant are high production per dollar of wages paid, low fuel and electricity costs, and low property taxes.

High Production per Dollar of Wages Paid

The value added by manufacture[1/] per dollar of production labor cost for the various states producing fabricated rubber products (SIC 3069) is compared in Table 3.

Table 3

EFFICIENCY OF PRODUCTION WAGE EXPENDITURES
IN GEORGIA AND MAJOR PRODUCING STATES

Producing State	Value Added per Dollar of Production Wages Expended
GEORGIA	$ 3.763
Tennessee	2.984
Massachusetts	2.813
New York	2.558
Pennsylvania	2.532
New Jersey	2.516
Ohio	2.222

Source: Computed from data in 1958 U. S. Census of Manufactures.

This comparison indicates that for each dollar of production wages expended a Georgia plant would have a greater product output than plants in the major producing states. To illustrate the potential saving in labor cost which can be gained from a Georgia operation, the yearly labor costs of average-size rubber hose plants ($4.4 million shipments) in various producing states are given in Table 4.

1/ A U. S. Census term signifying the value of the final product minus the value of the raw materials.

Table 4

ESTIMATED ANNUAL PRODUCTION LABOR COSTS
FOR TYPICAL FABRICATED RUBBER PLANTS
IN GEORGIA AND MAJOR PRODUCING STATES

State	Value Added by Manufacture	Annual Production Payroll	Excess Over Georgia Cost
Ohio	$2,330,000	$1,048,000	$429,000
New Jersey	2,330,000	926,000	307,000
Pennsylvania	2,330,000	920,000	301,000
New York	2,330,000	911,000	292,000
Massachusetts	2,330,000	828,000	209,000
GEORGIA	2,330,000	619,000	---

Notes: For computation purposes, a typical plant is considered to ship $4.4 million worth of goods annually.

Value Added by Manufacture determined by dividing $4.4 million shipments by the U. S. ratio of shipments per dollar of value added by manufacture (1958 U. S. Census of Manufactures).

Production Payroll computed by dividing the value added by manufacture for each state by the state ratio of value added per dollar of production wages paid found in Table 3.

A Georgia plant would save a manufacturer between $200,000 and $400,000 on $4.4 million in shipments, a saving of 4.5% to 9.1% of sales volume. Since profits in the industry range from about 6.0% to 8.5% of sales, this saving in labor cost would increase profits by at least 60% and could conceivably more than double the average profit figure for the industry.

Other Savings

In comparison with labor savings other possible individual savings, taken separately, are not large. In the aggregate, however, they are substantial. Natural gas rates, for example, are at least 49% cheaper in Atlanta than in northern industrial cities. Therefore, fuel costing $35,000 a year (0.8% of value of shipments) in one of the less expensive northern industrial areas will cost only $17,000 in Georgia for interruptible service. (See Table 5.)

Table 5

AVERAGE MONTHLY FUEL COSTS IN ATLANTA AND NORTHERN CITIES

Consuming Area	General Service	Interruptible Service
Monthly Gas Consumption Rate - 5 million cubic feet		
Cambridge, Mass.	$ 6,751.26	None
Akron, O.	3,358.06	None
Buffalo, N. Y.	3,066.81	None
Atlanta, Ga.	2,371.50	$ 1,462.80
Monthly Gas Consumption Rate - 10 million cubic feet		
Cambridge, Mass.	13,351.26	None
Akron, O.	6,708.06	None
Buffalo, N. Y.	5,816.81	None
Atlanta, Ga.	4,000.00	2,925.60
Monthly Gas Consumption Rate - 25 million cubic feet		
Cambridge, Mass.	31,151.26	None
Akron, O.	16,757.06	None
Buffalo, N. Y.	14,066.81	None
Atlanta, Ga.	10,000.00	7,314.00

Source: American Gas Association Rate Service

The cost advantages of a Georgia plant over present plants are additionally increased by the following factors:

1. Lower capital investment is required for a given production capacity in Georgia than in the Northeast. This lowers the amount spent on property taxes, increases the percentage of return on the investment, and increases the actual earnings.

Construction costs are proven to be low. Leading contractors are building plants in the Atlanta area at costs that are 14% to 40% less than construction costs in many other sections of the country. For example, one company recently accepted bids for plants built to the same plans at two different locations. The bid in Atlanta was $60,000; on a site in New Jersey, the bid was $95,000. Another comparison under the same conditions found Atlanta costs 20% lower than costs in a central Illinois town.

Contractors claim that the main reasons that construction costs are lower in Atlanta are better climate and higher worker productivity. There are more working days under favorable weather conditions. The attitudes of the workers -- both union and non-union -- are reported to be superior, and effective use may be made of new labor-saving tools.

2. Electric rates in Georgia are 60% to 80% of the rates in the New York City area.

3. Taxes in Georgia are lower than in many other places. Some specific examples are listed in Table 6.

Table 6

COMPARISON OF GEORGIA PROPERTY TAXES WITH TAXES IN OTHER STATES

Georgia Location	Compared with	Georgia Tax as Per Cent of Compared Tax
Clayton County (Atlanta Area)	Caldwell Township, Essex County, N. J.	64
Atlanta, Fulton County	Newark, Essex County, N. J.	38
Clayton County	Buffalo, Erie County, N. Y.	40
Clayton County	Cook County, Ill. (Chicago Area)	54

Note: Tax comparisons are based on equal capital investments.

Source: Case studies and files, Industrial Development Division, Georgia Institute of Technology, Atlanta, Georgia.

CONCLUSION

As shown by the U. S. Census figures, the profits available from a fabricated rubber products plant in Georgia would be so much larger than they are from those states where production is concentrated that a company could expect at least 60% more income on a smaller investment. The additional profit easily might be twice that on a comparable investment in the northern manufacturing belt.

A Georgia plant could profitably serve a national market because any freight disadvantage would be balanced by savings in any one of the utilities.

APPENDICES

Appendix 1

TRUCKLOAD MOTOR FREIGHT RATES ON BELTS AND BELTING

Truckload motor freight rates from four major producing cities and Atlanta to 15 major wholesaling centers in the U. S. are compared in the tabulation on the following page for:

Type A: Belts or belting, NOIBN,[1/] including "V" type, in packages;

Type B: Belts or belting, elevator, conveyor, or transmission, rubber or plastic, or rubber or plastic and fabric combined, other than "V" type, in packages.

Freight rates (columns A and B) are expressed in cents per 100 pounds.

Minimum weights (MIN) are given in thousands of pounds.

1/ "not otherwise indexed by name."

MOTOR FREIGHT RATES FROM ATLANTA AND MAJOR PRODUCING CITIES
TO MAJOR WHOLESALING CENTERS IN THE U. S.

	FROM:														
	Akron, O.			Buffalo, N. Y.			Cambridge, Mass.			Los Angeles			ATLANTA, GA.		
TO:	A	B	MIN	A	B	MIN	A	B	MIN	A	B	MIN	A	B	MIN
ATLANTA, GA.	180	159	22M	204	181	24M	229	203	24M	511	511	24M	-	.15	20M
Boston, Mass.	172	153	20M	146	132	24M	-	17.5	20M	558	558	24M	229	203	24M
				139	125	30M									
Chicago, Ill.	115	100	20M	134	119	20M	209	185	20M	344	344	20M	182	161	22M
	104	90	30M	121	107	30M				342	342	30M			
Cincinnati, O.	98	87	20M	106	96	20M	199	178	20M	418	418	20M	131	116	22M
				95	86	30M				376	376	30M			
Cleveland, O.	48	43	20M	81	73	20M	166	147	20M	511	511	24M	180	159	22M
				78	70	30M									
Dallas, Tex.	277	276	20M	302	301	24M	315	314	23M	511	511	24M	207	184	24M
Detroit, Mich.	86	79	20M	115	100	20M	175	156	20M	402	402	20M	182	161	22M
	78	71	30M	104	90	30M				376	376	30M			
Houston, Tex.	288	287	20M	347	345	20M	321	320	23M	355	316	24M	207	184	24M
Los Angeles, Calif.	537	537	20M	537	537	20M	577	577	20M	-	17.5	20M	511	511	24M
	511	511	24M	511	511	24M	558	558	24M						
	473	473	30M												
Milwaukee, Wis.	123	108	20M	157	142	20M	209	185	20M	465	465	24M	194	172	22M
	111	97	30M	142	128	30M									
New York, N. Y.	151	134	20M	133	96	24M	67	67	32M	558	558	24M	201	178	24M
				127	86	30M									
Philadelphia, Pa.	139	123	20M	137	96	24M	124	110	24M	558	558	24M	188	167	24M
				130	86	30M	117	104	30M						
Pittsburgh, Pa.	78	70	20M	105	91	23M	171	152	24M	511	511	24M	188	167	24M
	66	60	30M				163	145	30M						
St. Louis, Mo.	147	133	20M	175	157	20M	234	208	20M	289	289	20M	163	145	22M
	133	120	30M	158	142	30M									
San Francisco, Calif.	537	537	20M	537	537	20M	577	577	20M	108	108	20M	511	511	24M
	511	511	24M	511	511	24M	558	558	24M	73	73	30M			
	473	473	30M												

Appendix 2

SYNTHETIC RUBBER PLANTS NEAREST GEORGIA

Plant	Products
Borden Chemical Company Demopolis, Alabama	SBR, master batches
Copolymer Rubber & Chemical Company Baton Rouge, Louisiana	SBR, master batches
Dewey and Almy Chemical Division, W. R. Grace and Company Owensboro, Kentucky	SBR
E. I. du Pont de Nemours & Company Louisville, Kentucky	Neoprene, Hypalon
Firestone Synthetic Rubber Division, Firestone Tire and Rubber Company Lake Charles, Louisiana	SBR
Goodrich Gulf Chemicals, Inc. Institute, West Virginia	SBR
Marbon Chemical Division, Borg Warner Corporation Washington, West Virginia	SBR
Naugatuck Division, U. S. Rubber Company Baton Rouge, Louisiana	SBR, butadiene, acrylonitrile
Union Carbide Corporation Long Reach, West Virginia	Silicone rubber