A STUDY OF ALBERTA'S SECONDARY FOREST PRODUCTS MANUFACTURING INDUSTRY

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Hallmark Engineering Ltd.[1]
Woodbridge, Reed and Associates Ltd.[2]

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[1]Edmonton, Alberta
[2]Vancouver, B.C.

DISCLAIMER

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Regional Development
Canadian Forestry Service
5320 - 122 Street
Edmonton, Alberta
T6H 3S5

EXECUTIVE SUMMARY

The Ministry of Economic Development required information on the current status of secondary manufacturing of solid wood products in Alberta and the markets for these products. A study was undertaken in early 1983 by Hallmark Engineering Ltd., the forest products division of Monenco Consultants Limited, and Woodbridge Reed and Associates.

It was found that the secondary manufacturing sector was substantially greater than had been expected. It provides direct employment for about 5500 people in Alberta and has an annual sales volume in excess of $400 million. Over 300 Alberta companies were contacted in the course of the study, the majority by personal interview, and it is believed that the information obtained covers 90 percent of the activity in the sector.

Within the definition of secondary manufacturing used, there were nine main industry sectors defined. These were manufacturers of: cabinets, doors, furniture, manufactured homes, millwork, relocatable structures, various remanufactured products, trusses and windows.

The major part of the raw materials used by most of these industry sectors is not based on the Alberta forest resource but is imported from other provinces, the U.S. and overseas. Some part of this demand could, technically, be satisfied by the Alberta resource if suitable manufacturing facilities or techniques existed. An Alberta particleboard, or possibly MDF, plant would have a substantial domestic

market. Similarly, the availability of specialty grades and dimensions of lumber that could, technically, be manufactured from Alberta logs would encourage greater use of local material.

The economic feasibility of such activities has not been analysed.

The majority of the sales by the secondary manufacturing sector is destined for consumption in Alberta. Thus the current depressed state of the Alberta economy, particularly in construction, has had a very severe effect on most of the companies. Industry sub-sectors, such as millwork, custom design cabinets and furniture and standard trusses, which all tend to be localised and sell within a relatively small area, are particularly badly affected. Considerable over-capacity exists and demand must recover dramatically before these industries can be expected to expand.

There are however other industry sub-sectors where the manufacturing capacity in Alberta is well below the demand. Consequently, there appears to be growth potential for manufacturers of windows, doors, furniture and, to some extent, kitchen cabinets. The growth will, of course, depend on the ability of a local industry to compete with manufacturers from outside the province.

There are a number of products, that could be manufactured from the Alberta forest resource, that have good potential in North American markets. These would all provide a higher value return than the solid wood product, i.e. basic construction lumber, that is currently being sold. They would include unfinished pine furniture, interior shutters, laminated boards, interior panelling, MSR (Mechanically Stress

Rated) lumber and lumber in home centre sizes. Strong markets are foreseen for all these product lines and they can all, technically, be manufactured from the Alberta resource. The economic feasibility, however, of such manufacture would need to be investigated on a product specific basis.

There is also potential for the export, to markets such as Europe, of higher value lumber grades and dimensions. These markets have very different characteristics to the North American market and need a very different approach.

It is believed that the secondary manufacturing wood industry in Alberta is of very great importance to the Alberta economy; more so, in employment terms, than the primary wood industry. Consequently it is suggested that the Alberta government should provide a strong supportive role in the development of this industry sector. Government initiatives could include: technical and feasibility analyses of some of the products that appear to have potential; the funding of private sector groups to visit specific market; and the establishment of staff within the ministry with specific responsibility for this industry sector.

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SECTION 1.0

INTRODUCTION

There are many companies in Alberta involved in secondary manufacturing solid wood products. There has, however, been limited information available on the nature, extent and activities of the various industry sectors involved. Without greater knowledge of these aspects it is difficult for the province of Alberta to plan any industry development strategies.

Consequently, the Ministry of Economic Development commissioned a study in order to develop the necessary information. The essential terms of reference were:

- to identify the present status of secondary manufacturing of solid wood products in Alberta

- to identify both existing and potential markets for these secondary forest products

The study was undertaken by Hallmark Engineering Ltd., the forest products division of Monenco Consultants Limited of Edmonton together with Woodbridge Reed and Associates of Edmonton and Vancouver. The work was undertaken during the first half of 1983.

This report is presented in two parts. The first provides information on each of the secondary manufacturing industry sectors in Alberta. The sectors are defined; information is given on the types of companies involved and the the raw material consumed; the level of activity of the

sector is discussed. The results of market studies in Toronto and the U.S. Midwest are summarized with a commentary on the market potential for Alberta secondary manufacturers. This first part of the report finishes with conclusions and suggests a number of strategic initiatives that could be taken by the Government of Alberta in order to encourage the development of secondary manufacturing in Alberta.

The second part of the report is in the form of a list of secondary manufacturers contacted in Alberta. This list shows the name and address of the company; describes the nature of the business and defines the size of the company.

A further more detailed document has also been provided to the Ministry of Economic Development which includes more extensive commentary on each company in the form of field interview notes.

SECTION 2.0

METHOD

Since no up-to-date or inclusive list existed for secondary manufacturers of solid wood products the consultants relied on a variety of sources of information. These included a number of trade directories, the yellow pages in individual cities and comments by companies on local competition. The consultants physically visited the great majority of the companies listed and held discussions with appropriate sources in each company. The information obtained related to the activity of the company, the products manufactured, the raw materials consumed, the distribution of sales and the competition.

Considerably more companies were identified than had originally been expected.

Furthermore there were a number of companies which, though listed in directories as manufacturers, are not classified as such.

The consultants believe that, for the purposes of this study, the raw material (the solid wood) should be cut or altered in some way in order that the operation can be defined as "secondary manufacturing". Thus a window company which has, as its input, components that have been manufactured elsewhere for assembly in Alberta into the final product, would not qualify. Similarly, a furniture company which purchases frames, already made up, and then carries out the upholstery would also not qualify. In this latter case the company that made the frame is identified as the secondary manufacturer.

The cities visited in the course of the study were Calgary, Edmonton, Lethbridge, Lloydminster, Medicine Hat, Red Deer and St. Albert. The population of these cities is equivalent to 63 percent of the population of Alberta. However, analysis of the most recent Statistics Canada figures for Manufacturing Industries (31-209; 1979) indicates that the regions covered include over 80 percent of the manufacturing activity. Furthermore, it is believed that a significant part of the manufacturing that exists in the areas outside these cities tends to be primary not secondary manufacturing.

Consequently, though it is known that not every secondary manufacturing company was contacted, the consultants believe that the information obtained relates to about 90 percent of the industry activity in the various sectors. This level is based on the conservative assumption that 95 percent of all large companies were contacted, 80 percent of medium companies and at least 50 percent of small companies.

Subsequent to the interviews of secondary manufacturers, a classification method was developed in order to assign each company to a specific industry sector. Each sector was then analysed in order to determine the activity in that sector.

One of the principal problems in developing categories and then allocating companies to one or other category is the dynamic nature of the wood industry at the secondary manufacturing level. Exactly the same company, using the same work force, equipment and facilities could have as its principal manufacturing activity, at any one time, millwork or cabinets or institutional furniture or custom furniture. It could depend on the type of contracts obtained. Thus the appropriate classification in 1983 may be different from that in 1984.

In addition to the opportunities for the manufacture of secondary solid wood products for consumption within Alberta, an important consideration must be the potential for export. The consultants therefore carried out a market survey to identify some of the product lines that could be manufactured in Alberta.

Since many secondary products are consumer oriented the market survey concentrated on products moving through retail outlets. Some time was, however, also spent on industrial consumption.

The terms of reference did not call for any analysis of the economic feasibility of producing any of the products for which potential exists. Some consideration, however, was given to this important aspect though only in general terms.

SECTION 3.0

THE STATUS OF ALBERTA SECONDARY MANUFACTURING INDUSTRIES IN WOOD PRODUCTS

* areas of potential for market extension & productivity improvement

3.1 SUMMARY

There is a large number of companies in Alberta involved in the secondary manufacture of wood products in one form or another. Well over 300 companies were contacted. Of these, it was judged that 234 qualified as secondary manufacturers. The balance were excluded since though many were listed in various directories as manufacturers, their activity related more to distribution or assembly or they were inactive. An analysis of the survey results is presented in Table 3.1.

Close to 40 percent of the companies are currently very small with less than 5 employees. It should be emphasized however that a significant number of these are small due to current economic circumstances. Many have the capacity and facilities to employ considerably more than 5 people.

A single size category has been used to classify companies with over 20 employees. This category accounts for about a quarter of the number of companies but is responsible for 60 percent of the direct employment generated by the secondary manufacturing sector.

The total number of employees based on the information obtained in the discussions with the companies visited was close to 5,000. It is known, however, that there are certainly some companies in Alberta which would qualify as secondary manufacturers but which were not contacted. On the assumption that 90 percent coverage was obtained, the total direct employment would be in the region of 5,500 people. This is substantially more than is recorded by Statistics

TABLE 3.1

Summary of Alberta Secondary Manufacturing

Ranked in Order According to the Number of Employees

Business	Companies Interviewed				Total Employees Reported to be Engaged	Annual Sales Report	No. of Companies Reporting Annual Sales & % Reporting	Inactive Companies or Not Manufacturers
	Total	Small 0-5 empl.	Medium 5-20 empl.	Large 20 plus				
Furniture	28	9	6	13	1072	$ 53,000,000	17 of 28 (60%)	9
Millwork	39	12	17	10	544	$ 35,450,000	27 of 39 (70%)	5
Manufactured Homes	14	-	4	10	617	$ 42,300,000	9 of 14 (64%)	6
Relocatable Structures	8	1	3	4	605	$ 68,300,000	5 of 8 (62%)	2
Cabinets	49	28	11	10	516	$ 30,205,000	24 of 49 (50%)	13
Windows	13	2	5	6	446	$ 21,150,000	9 of 11 (81%)	9
Trusses	29	14	9	6	325	$ 18,862,000	22 of 29 (75%)	1
Doors	13	4	4	5	222	$ 14,100,000	9 of 13 (70%)	15
Remanufacturing	17	7	7	3	176	$ 9,800,000	7 of 17 (41%)	3
Mobile Homes	1	-	-	1	120	$ 10,000,000	1 of 1 (100%)	
Beds	3	1	1	1	92	$ ----	0 of 3 (0%)	3
Beams	1	-	-	1	75	$ 7,000,000	1 of 1 (100%)	
Countertops	2	1	-	1	28	$ 175,000	1 of 2 (50%)	
Overhead Doors	5	4	1	-	23	$ 500,000	1 of 5 (20%)	3
Spindles	4	3	1	-	21	$ 1,650,000	3 of 4 (75%)	3
Houseboats	1	-	1	-	15	$ 1,000,000	1 of 1 (100%)	
Stairs	3	2	1	-	14	$ 500,000	1 of 3 (33%)	3
Caskets	3	2	1	-	14	$ 1,000,000	1 of 3 (33%)	4
Carpet Grippers	1	-	1	-	7	$ 800,000	1 of 1 (100%)	1
	234	90	73	71	4932	$315,792,000		80

Canada for the primary industries of sawmills, plywood mills and pulp mills. The aggregate for these three sectors was only 3,830 in 1980 (the most recent year reported)

Unfortunately the consultants were unable to obtain, from a number of the small and medium companies, any figure for annual sales volumes. The total of the sales advised was $316 million. Bearing in mind that coverage of the industry was not total, and the percentage of companies not reporting sales, it seems likely that the total annual sales value of the secondary manufacturing industry is in excess of $400 million.

It has proved difficult to cross check the findings of the survey against any official Statistics Canada figures. This is due partly to a lack of current data from Statistics Canada and partly to inconsistency in the methods of classification used. The number of establishments shown by Statistics Canada for 1980 is only 150 in Wood Industries plus 75 in Furniture. This compares with 240 companies actually located in the study. Bearing in mind that a number of small companies were not contacted and that the recent poor economic conditions have reduced the number of companies, it seems probable that the Statistics Canada figures could be significantly understated.

The highlights of the main industry sectors are:

.1 Cabinets

A large number of small companies manufacturing custom design cabinets and relatively few large companies producing kitchen cabinets. Virtually no solid wood products that can be produced from the Alberta resource are used.

There is, however, a significant volume of particleboard consumed. This could be produced locally.

Demand/supply balances indicate that there could be a limited expansion in kitchen cabinet manufacture in Alberta to compete with products imported from other provinces. The current capacity of custom design cabinets is such that there is not much room for expansion.

.2 Doors

There is one production line flush door manufacturer and a few specialty door manufacturers. The solid wood requirements are not suited to the Alberta resource. Local production of flush doors accounts for about one third of Alberta demand and the balance is imported into the province. There is, therefore, potential for increased door manufacturing facilities in Alberta based on likely future demand. Local availability of suitable door skins would improve the opportunity of achieving this potential.

.3 Furniture

This sector covers a wide range of products and includes large companies, manufacturing production line goods, and small companies producing custom design furniture. Solid wood requirements are primarily hardwoods imported into the province. There is a limited potential for a suitably manufactured poplar lumber and high quality poplar plywood. Substantial volumes of particleboard are used and this industry sector would provide a strong market for local particleboard, or possibly MDF, production.

The consumption of furniture in Alberta is much greater than production. There would therefore appear to be the potential for some expansion in this industry. There are currently no manufacturers of production line pine furniture. If this market expands as is projected, pine furniture, based on the Alberta resource, could have great potential.

.4 Manufactured Homes

This is an important industry which has developed more in Alberta than in other parts of Canada, except B.C. Much of the raw material used is, or could be, from the Alberta resource. The industry is very sensitive to activity in single family housing construction and is therefore very depressed at present. Trends in North America indicate that manufactured homes, or at least some amount of factory prefabrication, will increase as a proportion of new construction. Consequently, the prospects for the industry are favourable. Possible constraints to growth relate to zoning regulations and mortgage financing. Governments and institutions have been slow to understand that the manufactured home of today is very different to the type of prefabricated or mobile unit that used to exist.

.5 Millwork

There are a large number of companies in the millwork industry; most being relatively small. Virtually none of the raw material consumed is based on the Alberta resource. There are, however, opportunities for limited volumes of high quality poplar plywood and, also, a locally produced particleboard or MDF. Very little work is done outside Alberta and there is a significant impact on the Alberta industry from out-of-province companies quoting against large

contracts in Alberta. Industry representatives commented frequently on the lack of provincial protection in Alberta in contrast to the protection provided by other provinces to their domestic millwork industry.

The industry is currently in a very depressed state with many companies at under half their capacity. A number have gone bankrupt. Even when the economy recovers it seems unlikely that there will be room for any significant expansion in this sector since the capacity already exists to satisfy increased demand.

.6 Relocatable Structures

Alberta is regarded as one of the centres in North America for the production of relocatable structures. There is one very large company and several smaller companies. Apart from lumber and plywood used for the frame of the units the wood products consumed by the industry are not based on the Alberta resource. The distribution of sales of the industry includes a significant amount of export out of Alberta.

The current state of the industry is very poor with many companies having ceased manufacture for the moment. Bearing in mind the latent capacity of the industry it is difficult to forecast any substantial industrial expansion in this area. More realistically, some initiatives are needed to keep the existing industry in operation.

.7 Remanufacturing Sector

The definition used to describe the remanufacturing sector includes a great variety of companies and products. Thus there are companies which simply custom cut, others that sell remanufactured lumber to secondary manufacturers and others that produce a number of different products.

Considering the wide variety of activities that have been included it is somewhat surprising that there are not more companies involved. Though some companies use raw material from elsewhere, the major species remanufactured are those available from the Alberta resource.

There is considerable room for expansion in this industry sector. Markets exist in areas such as the U.S. for a number of products that could be remanufactured from the Alberta resource. These are discussed in section 4 on marketing opportunities. Given that the raw material exists and that there are potential markets, the remaining question is whether an Alberta production facility can be economically feasible. Product and site specific analyses are required.

.8 Truss Manufacturers

Truss manufacturers vary significantly in size, from large companies specializing in trusses, to small two or three man divisions within a building supply company. The major part of the raw material used can be supplied from the Alberta resource. Alberta is essentially self-sufficient in trusses with neither imports nor exports playing a significant part. There are also two companies producing specialty beams that are exported but depend to a large extent on imported raw material. The industry is dependent almost entirely on the construction market and the capacity currently exists to handle a considerably greater volume. It appears unlikely therefore that this sector has the potential for significant expansion.

.9 Windows

There are a number of companies producing specialty or custom designed windows but one company predominates in the manufacture of production line windows. At present virtually none of the raw material used could come from the Alberta resource. It is possible, however, that lumber, suitable for at least part of window manufacture, could be manufactured from the domestic resource. Research is required to establish the viability of the development of suitable grades.

Alberta consumption exceeds domestic production. There is, therefore, considerable expansion potential for this industry. The suitability of a local product would enhance this potential.

The basic conclusions that were reached as a result of the survey were that the secondary manufacturing industry makes a substantial contribution to the Alberta economy and a number of the industry sectors have good potential for expansion.

3.2 INTRODUCTION

In the following chapter, an analysis of each of the industry sectors is presented. These sector analyses define the products being produced, the types of companies involved, the materials used and the activity in the sector.

Wherever possible, the findings of the survey have been related to the information available from Statistics Canada. This has proved difficult due to the different methods of classification and the lack of any up-to-date statistics from Statistics Canada.

The most recent official statistics available that relate to the market size of the different sectors are those for 1979. The details relevant to secondary manufacturing have been extracted and are shown in Table 3.2.

In overall terms , it appears from the Statistics Canada figures that the Alberta manufacturers distribute, locally, almost 80% of what is produced but that they only satisfy 54% of the local market. If the classification "Prefabricated Buildings", which includes some manufacture of relocatable structures, is excluded then local manufacture only accounts for 44% of the Alberta market.

The furniture industry is known not to be well established in Alberta, and the Statistics Canada figures indicate that only one third of Alberta consumption is produced locally.

Further statistics of a general nature available from Statistics Canada are shown in Table 3.3. These relate to the number of establishments discovered to be operating in the industry sector concerned. Thus, in the wood industries, Statistics Canada record about 150 establishments in the two most recent years for which statistics have been published. Of these about 66 companies are believed likely to account for 90 to 95% of all activity according to Statistics Canada.

Where possible these Statistics Canada figures have been analysed relative to the findings of the survey for each sector. It should be emphasized, however, that this has proved difficult. Furthermore, it has been apparent that there are a number of companies engaged in secondary manufacturing solid wood products that are not identified as such in Statistics Canada.

TABLE 3.2

Secondary Manufacturing Industries - Alberta 1979

Wood Industry and Furniture

Million $

dustry Classification	Alberta Manufacture		Alberta Market[2]	Alberta Manufacturers Share
	Total	of which shipped to Alberta[1]		
od Industries				
41 Sash, Door & other Millwork NBS	54.9	44.9	84.8	53%
43 Prefabricated Buildings	123.6	89.8	106.9	84%
44 Kitchen Cabinets	33.2	28.3	39.1	72%
Wooden Box Factories	N/A	N/A	N/A	-
Coffins & Caskets	1.3	1.3(c)	3.1	42%
Miscellaneous [3]	7.4	3.8	8.2	46%
total	220.4	168.1	242.1	69%
niture Industry				
9 Household Furniture	28.3	16.7	98.6	17%
Office Furniture	21.3	15.9	33.8	47%
Miscellaneous furniture	32.3	31.7	54.7	58%
total	81.9	64.3	187.1	34%
AL	302.3	232.4	429.2	54%

Includes a proportion of unallocated shipments.

Assumed to be equivalent to total Canadian shipment to Alberta.

Excluding wood treatment and particleboard.

rce: Statistics Canada 31530

TABLE 3.3

Secondary Manufacturing Industries - Alberta

Number of Establishments

	1979		1980	
	Total	Listed 1/	Total	Listed 1/
Industries				
Sash, Door & other Millwork NBS	54	27	58	27
Prefabricated Buildings	16	11	16	10
Kitchen Cabinets	42	16	51	20
Wooden Box Factories	7	2	9	3
Coffins & Caskets	4	3	6	3
Miscellaneous [2]	16	4	17	7
tal	139	63	157	70
ure				
Household Furniture	36	10	37	12
Office Furniture	11	7	14	9
Miscellaneous furniture	25	7	25	7
tal	72	24	76	28
	211	87	233	98

e larger companies to whom "long forms" were sent by Statistics Canada.
atistics Canada believes that these should normally account for 90 to 95%
the activity in the sector.

cluding wood treatment and particleboard

3.3 CABINETS

DEFINITION

The cabinet manufacturing sector in Alberta includes the manufacture of kitchen cabinets, vanities and custom made cabinets for a variety of purposes in residential, commercial and institutional applications. Comments regarding the problems of definition and allocation have already been emphasised in Section 2 "Method".

Within the area of kitchen cabinet manufacture there are two fairly distinct categories - the manufacture of production line units and the manufacture of custom built units. It is in this latter category that the problem of identification and allocation by sector becomes acute.

TYPES OF COMPANIES

It is essentially only the manufacturers of production line kitchen cabinets that are large, with over 20 employees. The tendency in the custom cabinet manufacturing industry is for relatively small companies with up to 10 employees.

There are also some companies, Citation and Crestwood, that produce and distribute kitchen cabinets using, as their raw material, precut parts manufactured outside Alberta. To the extent that these companies are assembling and distributing, it is questionable whether they should be identified as "Secondary Manufacturers" in the context of this report. They are, however, included in the Statistics Canada

information discussed later, and, since the amount of assembly involved is substantial, they have been included here as cabinet manufacturers.

MATERIALS USED

The cabinet industry in Alberta uses very little softwood lumber and effectively none that could be provided by the Alberta forest resource. Where solid wood is used it is principally a hardwood such as oak, maple, alder, birch and so on. The major raw material, however, is in panel form and is principally particleboard, particularly for the more competitive production line kitchen cabinets. This particleboard is normally purchased already laminated though some of the companies have the facility to undertake this activity themselves. The particleboard is also used with just a paint surface in some of the less critical areas of the units.

It is estimated that between 7 and 10 million square feet 5/8" of particleboard is consumed annually by the Alberta cabinet industry.

A significant number of the companies, of the small to medium size that produce standard lines of cabinet, purchase the cabinet fronts already manufactured by eastern Canadian companies.

ACTIVITY

Though the number of companies manufacturing production line kitchen cabinets is relatively small compared with those producing custom designed cabinets and vanities, they do, nevertheless, represent the greater part of the activity in the cabinet sector. An analysis of the Statistics Canada information on kitchen cabinet manufacturers in Alberta is shown in Table 3.4. These figures include companies that only assemble rather than undertake any actual remanufacturing of the raw material.

It can be seen from the figures that there was a rapid expansion during the late 1970's. The number of companies doubled, the work force increased by 50 percent and the value of shipments more than doubled. Of particular interest is the large value added component in this sector. During the period 1976 - 1980 it remained fairly constant at around 60 percent of sales value.

From discussions with the cabinet industry it appears that relatively little, probably less than 10 percent, of the production line kitchen cabinets that are produced in Alberta are exported. Furthermore, virtually all the custom built cabinets are for local consumption. On the other hand it is apparent that there are significant volumes of kitchen cabinets imported from outside the province.

It is particularly interesting to note that the increase in activity during the period was considerably greater than what might have been expected, bearing in mind the construction market. A comparison of the sales values of

kitchen cabinets with housing starts is shown in Table 3.5. Even though there is an inflationary component in sales value it is apparent that Alberta production has been obtaining an increasing share of Alberta demand for cabinets.

No statistics are available regarding the total market for cabinets. It is possible, however, to obtain an approximation by analysing housing starts in Alberta by type. There is a significant variation in cost between the types of cabinet available. It appears generally accepted, however, that the average cost of kitchen cabinets in multi-family construction is about $700 to $1,000 per dwelling unit. In single family and row construction this average cost is substantially higher, at between $2,000 and $3,000. Using the published statistics for the last three years these average values would indicate that the market size would be as follows:

	Value of Kitchen Cabinets $ million (current)
1979	54.3
1980	49.7
1981	63.4
1982	46.0

These figures are developed from Table 3.6 and include an estimate for remodelling. A number of the production line manufacturers indicated that new housing represented the great majority of their work. It should be noted, however, that the smaller custom manufacturers tend to undertake a great deal of remodelling work. It is likely therefore that the figures quoted above are somewhat understated.

A comparison can be made of the Alberta market for 1979 and 1980 at $54 and $50 million respectively with the value of shipments (Table 3.4) for the same year by Alberta manufacturers. This indicates that significant volumes of kitchen cabinets were imported into Alberta. This was confirmed in discussions with manufacturers.

It should, however, be noted that there is a significant variance between what was established as a result of discussions and the information available from certain Statistics Canada publications. In "Destination of Shipments of Manufacturers 1979" (31-530) the following figures are reported for kitchen cabinets by Statistics Canada:

- Total production in Alberta	$33,236,000
- Alberta production known to be shipped to Alberta	$18,316,000
- Value of shipments with unknown destination from Alberta production	$11,750,000
- Total Canadian shipments to Alberta (including share of unallocated)	$39,138,000

If a large part of the unknown destination portion is consumed in Alberta then about 85 percent of Alberta consumption is satisfied by Alberta production. If this is not true then a substantial volume of kitchen cabinets is exported to other areas.

The conclusions drawn from the discussion with kitchen cabinet manufacturers indicate that neither of these alternatives are valid. Furthermore, the analysis of housing starts and the resulting demand for kitchen cabinets would suggest that the Statistics Canada total for shipments to Alberta is well below what would be expected.

Thus, though domestic manufacture has been growing, there may still be room for some further limited expansion based on an improved Alberta demand as the economy recovers. Local availability of suitable raw material, specifically particleboard, would encourage such expansion.

It is therefore suspected that there is some anomaly in the Statistics Canada figures. The consultants have established that significant quantities of kitchen cabinets are being imported into Alberta.

TABLE 3.4

Kitchen Cabinet Manufacturers - Alberta
(1976 - 1980)

	1976	1977	1978	1979	1980
No. of Establishments	24	20	29	42	51
Employees	580	516	653	814	891
Value of Shipments $000's	18,232	18,421	24,922	33,236	42,489
Total Value Added $000's	10,690	11,241	15,226	20,517	26,822

Source: Statistics Canada 35205 SIC 2544

TABLE 3.5

Kitchen Cabinet Sales and Housing Starts - Alberta

	Shipment Values of Kitchen Cabinets Manufactured in Alberta (million $)	Housing Starts in Alberta 1000 Units
1976	18.2	38.8
1977	18.4	38.1
1978	24.9	47.9
1979	33.2	39.9
1980	42.5	32.0

Source: Statistics Canada 35205 SIC 2544

TABLE 3.6

Estimated Value of Kitchen Cabinets

(1982 $)

	1979	1980	1981	1982
Single family starts*	27,678	23,628	24,732	14,178
@ $2,000 per unit				
= value of cabinets ($000)	55,356	47,256	49,464	28,356
Appartment unit starts	12,269	8,403	13,738	12,611
@ $850 per unit				
= value of cabinets ($000)	10,429	7,142	11,677	10,719
Estimate for remodelling				
@ 15% ($000)	11,609	9,600	10,790	6,896
Total	77,394	63,998	71,931	45,971

* including duplex etc.

3.4 COFFINS AND CASKETS

The great majority of the more expensive hardwood caskets sold in Alberta are imported. Domestic production tends to concentrate on the less expensive product lines manufactured from particleboard.

The figures from Statistics Canads, shown in Table 3.7 indicate that this industry is relatively small with 76 employees and around $2 million worth of sales in 1980.

TABLE 3.7

Casket Manufacture - Alberta

	1976	1977	1978	1979	1980
No. of establishments	6	4	3	4	6
No. of employees	50	53	N/A	47	76
Value of shipments	1,093	1,027	N/A	1,311	2,019
Value added	589	568	N/A	833	941

Source: Statistics Canada 35210

Bearing in mind that at least one company closed recently and that this sector is well defined, there appears to be a reasonable relationship between the findings of the survey and the information from Statistics Canda.

This would not appear to be an industry with the potential for much growth.

3.5 COUNTER TOPS

There are a number of companies that cut and finish counter tops on a custom basis. It has been judged that, for the purposes of this study, these companies do not qualify as "secondary manufacturing industries". The majority of them purchase laminated particleboard and essentially supply a service to the final consumer. There was one company identified, however, which also undertakes the laminating function and sells the finished counter tops. This company has been included as a manufacturer in the study.

It appears that the counter top industry is almost entirely based on particleboard with no solid wood and very limited volumes of plywood being used. This industry sector would provide an outlet for a local particleboard manufacturer.

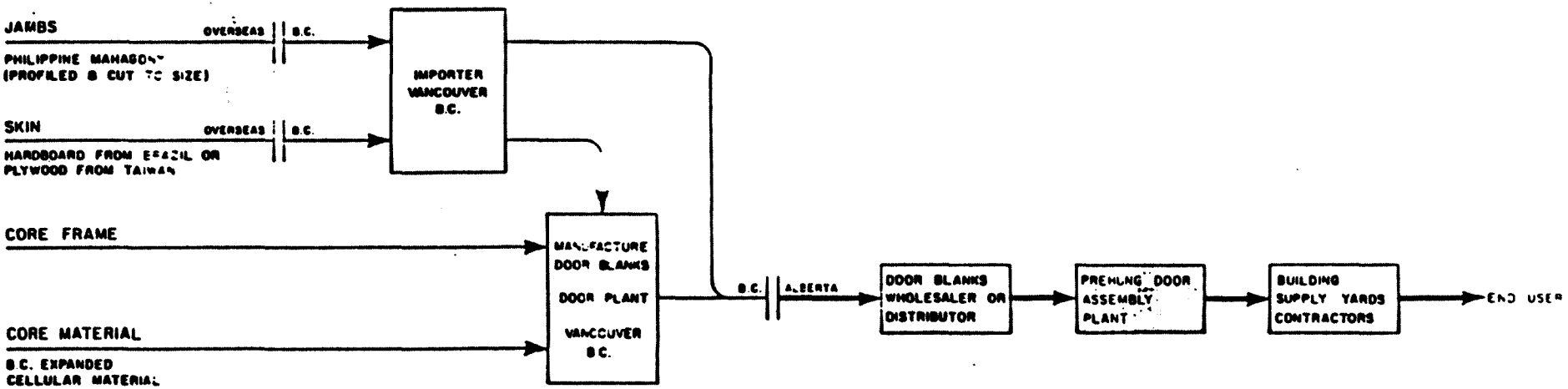
3.6 DOORS

DEFINITION

It has proved difficult to define, precisely, at which stage secondary manufacturing ends and construction activity begins. This is particularly true for flush doors. A typical flow chart is attached for flush door manufacturing. In this particular flow it can be seen that an intermediary stage is involved between the manufacture of the door itself and installation in the building. At this intermediary stage, which could be regarded as "tertiary manufacturing", the doors are mounted on the door frame before being sent to the construction site for installation.

For the purpose of this study it has been judged that this process of prehanging doors is part of installation and should not be regarded as a manufacturing activity. The Statistics Canada approach is somewhat equivocal. Only one of the companies that were identified, in the course of the study, as undertaking prehanging was listed among the main "Sash, Door and Other Millwork" manufacturers. Specific checks on other companies revealed that some are included (for example Parkwood Forest Products) in the total, but are not listed since their sales volumes are below $2.2 million (the cut off point for this category). Others such as Cascade Forest Products, Henderson's or KDR Door Systems do not appear to be included at all.

It is not possible therefore to develop any relationship between the information obtained in the course of the study and that available from Statistics Canada.



NOTES:

- THIS PRODUCT FLOW IS TYPICAL OF THE MAJORITY OF FLUSH DOORS CONSUMED IN ALBERTA.
- THERE IS NO ALBERTA PRIMARY WOOD PRODUCT INVOLVED.
- THE PREHUNG DOOR ASSEMBLY CONSISTS OF DRILLING THE BLANKS FOR LOCKS AND HINGES, MOUNTING THE HARDWARE (BUT NOT THE LOCK SET) AND ASSEMBLING IN A PRECUT FRAME.

DENOTES ALBERTA MANUFACTURING OPERATION.

DENOTES PRODUCT FLOW WITHIN ALBERTA.

There are other types of doors, in addition to flush doors. These are, principally, exterior doors, patio doors, cafe doors and bifold doors.

TYPES OF COMPANIES

The flush door business is highly competitive. It is essentially a commodity product and must therefore be manufactured on a production line basis. Very small custom design companies are unable to compete due to high unit costs. As a result, there is only one company in Alberta producing flush doors. This company produces the standard, most common lines and also imports, from the main branch in Ontario, some of the smaller volume items that are required in Alberta.

There are also some other companies that can be considered wooden door manufacturers. These companies produce custom design and speciality doors of various types - patio doors, bifold or sliding doors, special closet or decorative doors.

Apart from some companies involved in overhead doors, no companies producing exterior doors were identified in the course of the study. One company, however, advised that the Alberta market for exterior doors offered a substantial opportunity and this company plans to develop $2 million of sales per year based on the manufacture of oak entry doors.

The millwork industry also produces doors. However, these are usually custom designed and are part of a larger millwork contract.

MATERIALS USED

Of the companies contacted, none used any wood product produced in Alberta. The flush door manufacturer uses finger-jointed knot free pine from the U.S. and panel boards in the form of plywood, hardboard and particleboard from S.E. Asia, Brazil and the U.S. respectively.

The speciality and custom designed doors produced by the other companies utilize hardwoods and clear softwoods.

The areas of apparent potential, for products based on the Alberta resource, could lie in the production of doorskins in thin particleboard or hardboard and some small volumes of overlaid particleboard of greater thicknesses. Lodgepole pine could, technically, be finger-jointed to produce a knot free product for the flush door industry. It is questionable, however, whether this could be done economically. Furthermore, the volume is not very large at around 400,000 board feet per year for the existing production of flush doors. This volume is for a number of different dimensions.

ACTIVITY

Door manufacture is closely linked to residential housing starts since 60 to 70% of the consumption is in new housing. Analysis of housing starts, together with information produced by CMHC on materials used in housing, would indicate that interior door consumption in Alberta in the past five years has been approximately as follows, including an allowance for doors used in non-residential construction and home improvement:

	1000 Doors
1978	700
1979	625
1980	510
1981	580
1982	380

It is evident from these figures that the door industry has been severely affected by the decline in housing activity.

Local production accounts for about one third of consumption and the balance is imported. The majority of these come from B.C. and from S.E. Asia. The proportion of local production may have been somewhat higher prior to the purchase and subsequent closure of Arrow Doors in Edmonton.

Only a limited volume of interior doors produced in Alberta is sold outside the province. In the case of specialty and custom built doors manufactured in Alberta it appears likely that virtually all are sold within the province. Furthermore, it would seem that the majority of exterior doors are imported.

As the economy improves and housing starts increase it appears likely that there should be a return to a higher demand for doors. There would therefore appear to be the potential for the establishment of additional manufacturing facilities for doors. Local production of a suitable panel board would be a positive aspect since, currently , there is no Alberta availability of the necessary raw material for the production of any type of door.

3.7 FURNITURE

DEFINITION

The furniture sector in Alberta covers a very diverse number of activities. Some are readily identifiable but others overlap the activity of other sectors such as millwork and cabinets. For the purposes of this analysis, companies included under the furniture sector include the following:

- Upholstered furniture manufacturers. These in turn can be divided into companies making their own frames, such as Palliser, and those buying frames from elsewhere (e.g. Kroehler and House of Braemore which buy the frames from another company).

- Manufacturers of office, commercial and institutional furniture. To some extent these overlap with millwork companies which may produce custom designed furniture as part of an interior finishing contract. Further overlap also occurs since millwork companies quote against institutional furniture.

- Companies manufacturing furniture on a custom design basis. There is some overlap between these companies and two other sectors. Both the millwork and the smaller cabinet companies manufacture custom design furniture.

- Manufacturers of beds, box springs and water beds.

- Manufacturers of case goods (defined in this study as furniture that provides storage capacity but excluding office furniture which is treated separately).

It should be noted that neither these definitions nor the decisions on where to allocate any particular company necessarily relate precisely to the approach taken by Statistics Canada, which provides information for the following classifications under furniture:

- SIC 2611 "Furniture Re-upholstery and Repair Shops". This category of activity has been essentially ignored since it is believed that it does not qualify as secondary manufacturing industry.

- SIC 2619 "Household Furniture Manufacturers n.e.s." This category would include both the production line and the custom design companies. It also includes some companies that may be shown under "cabinets" in this report.

- SIC 264 "Office Furniture Manufacturers". It is known that this category includes companies that described themselves, in the course of the study, as specialists in architectural millwork and are therefore included under millwork.

- SIC 266 "Miscellaneous Furniture and Fixtures Manufacturers". Box springs and some institutional furniture fall under this category. In addition it has been observed that some millwork companies are also included.

The comments made in Section 2 regarding the problems of classification should be noted in the context of this industry sector.

TYPES OF COMPANIES

Bearing in mind the comments made in the previous section, it is clear that there are a number of small to medium size companies in the woodworking business in Alberta with the versatility to make furniture.

This production, however, tends to be on a custom design basis. There are, also, companies which specialize in furniture production.

Production line office furniture and office furniture systems are manufactured by some medium to large companies.

Upholstered furniture is produced in significant volumes by a number of medium to large companies in Alberta. Some of these manufacture their own wooden frames while others, strictly speaking, should not be regarded as secondary manufacturing industries in the wood sector since they contract out the frame manufacture. The latter group are serviced by companies whose main activity is the manufacture of frames. The principal of these is Can-West Products in Calgary.

A similar situation exists in the bed sector. Whereas some companies make their own wooden frames, others (probably the majority) purchase frames already manufactured. This applies particularly to the manufacturers of box springs. The pattern of activity is somewhat less clear in the manufacture of water beds. It appears that there are a number of small companies buying precut lumber and panel boards for assembly and manufacture into the finished article. At the same time, some of the versatile woodworking companies also produce finished frames where only a minor amount of upholstery is to be added.

There appears to be only a limited number of companies producing case goods on a production line basis in Alberta. There are however, as discussed earlier, a significant number of small and medium companies producing custom design cabinets and other items that can be classified as case goods.

MATERIALS USED

The principal wood product materials used in the furniture industry include:

- particleboard: often prelaminated or laminated in the plant.

- plywood: some CSP as produced in Alberta but often higher quality hardwoods from eastern Canada or overseas.

- alder: particularly for upholstered furniture frames. Some S-P-F is also used and there are occasions where poplar would be adequate. Most of the alder comes from the U.S. since there are few supply sources in B.C., even though substantial volumes of alder grow in the province.

- hardwoods: a variety of hardwoods, both North American and from overseas. Current consumer tastes favour the use of oak.

It appears that the current, or even potential, use of solid wood that could be produced from the Alberta resource is minimal in the furniture sector. There are, however, significant volumes of particleboard that are used. Most of this is in an industrial grade and the volumes involved, though not sufficient for the total output of particleboard plant, would certainly represent a significant share at about 15 to 20 million square feet 5/8" per year. Alberta production of industrial grade particleboard or possibly MDF, would therefore seem to have an existing domestic market.

There would also appear to be a potential market for poplar in parts of the frames for upholstered furniture. The volumes, however, would not be large.

One further possible area of interest based on the Alberta resource could be a high quality poplar plywood. The economics of producing a plywood with a suitable quality from the type of poplar logs available may, however, be questionable even if it is technically feasible.

ACTIVITY

The furniture sector in Alberta does not appear to have been affected by the poor 1982 economy to the extent experienced in other sectors such as millwork. Some of the larger companies advised that they were currently experiencing their strongest market ever.

There are no current statistics available to demonstrate this recent strength however it is apparent that there was considerable growth during the latter part of the 1970's. The statistics for the Alberta furniture

manufacturing industry for the period 1976-1980 are shown in Table 3.8. The number of companies had increased by over 50 percent in the period and the number of people employed by nearly 70 percent. It is also important to note the substantial proportion of "value added" generated in the furniture sector. This has averaged 55 percent of shipment value during the period.

It was noted earlier that Statistics Canada include, under furniture, a number of different types of furniture manufacturing. In order to investigate the relative importance of these, an analysis was undertaken for the most recent year, 1980, for which statistics are available. This is shown in Table 3.9. It is evident that half of the companies are involved in repairs and appear to be relatively small, averaging about 6 people each. This repair category only accounts for 10 percent of the sales value in the furniture sector. In contrast, the office furniture category has fewer but much larger companies and is responsible for one third of the sales.

As explained earlier, for the purposes of this study companies primarily involved in repair work are not considered as part of the "secondary manufacturing industry". Furthermore, companies principally engaged in millwork or manufacturing cabinets are shown elsewhere. It is not intended therefore to use, directly in this sectoral analysis, the information from Statistics Canada. It does, however, provide an indication of the trends in activity and the relative importance of each type of furniture.

Unfortunately, it did not prove possible to identify the present size of the Alberta market for furniture or the relative importance of imports against locally produced goods. The production line manufacturers in Alberta sell their goods to a number of markets other than Alberta, including some volumes to the U.S. At the same time, there is a large volume of furniture consumed in Alberta which is manufactured in eastern Canada. Contacts with the furniture association, "Furniture West", with retailers and with producers resulted in the conclusion that no reliable evidence existed.

It can be concluded, however, that the major part of the custom built furniture consumed in the province is produced in Alberta. It also seems reasonable to conclude that a substantial volume of the production line furniture that is consumed is imported from outside Alberta. This would appear to be particularly true for case goods such as dressers, cupboards and so on that form part of bedroom and dining room suites.

Analysis of Statistics Canada figures (31-530) shown in Table 3.2 in the introduction to this section (3.2) indicates that local manufacture accounted for 34 percent of consumption in 1979. Other Statistics Canada figures (63-540 "Origin and Destination of Goods of Merchandising Establishments - 1979") suggest an even lower percentage. In the category of "Household Furniture and House Furnishings" wholesale merchant establishments in Alberta acquired only 10 percent of their goods from Alberta manufacturres in 1979 according to this publication.

It is also worth noting that some pine furniture is sold in the Alberta market though none is produced in the province. Scandinavian companies have been particularly successful in developing this market and are apparently very interested in obtaining locally produced goods to their specifications. Lodgepole pine, as available in Alberta, can provide an excellent, sound tight knotted furniture grade which would be very suitable for the production of furniture of the type marketed by, for example, the Ikea organization. Discussions with this company indicated that about 15 percent of its business is in pine furniture.

On the assumption that other market outlets could be developed, in addition to Ikea, it would appear that an excellent opportunity exists for pine furniture production based on the Alberta resource. It would be essential however that the primary industry, the sawmills, extracts from the log the qualities and dimensions that are needed. Further comments regarding the market potential for pine furniture are included in the section on market potential (4.0).

TABLE 3.8

Furniture Manufacture in Alberta
1976 to 1980

	1976	1977	1978	1979	1980
Number of establishments	96	89	114	139	152
Total employees	1382	1595	1825	2144	2321
Value of shipments $000	49722	58936	69444	90809	110083
Value added $000	29568	30776	39359	46515	59597

Source: Statistics Canada 35 211 35212 35213

TABLE 3.9

Furniture Manufacture By Type in Alberta - 1980

	Number of Establishments	Total Employees	Value of Shipments $000's	Total Value Added. $000's
Household Furniture				
- Re-upholstery & repairs	76	449	10,694	6,536
- Manufacturers N.E.S.	37	733	33,591	16,128
Office Furniture	14	624	35,229	21,412
Miscellaneous Furniture and Fixtures	25	515	30,659	15,521
Total	152	2,321	110,083	59,597

Source: Statistics Canada 35211, 35212, 35213

3.8 MANUFACTURED HOMES

DEFINITION

This sector includes manufacturers of pre-fabricated residential dwellings and factory built buildings used for non-residential purposes in, for example, schools and farms. The sector is primarily associated with mobile home production even though, today, a high proportion of so-called mobile homes become permanent dwellings on the initial site. Moreover, there is an important, and growing, trend towards factory produced engineered homes designed as permanent structures. Some of these, at the upper end of the price bracket, are not only undistinguishable from site-built homes, they are frequently of higher quality construction. Consequently, there is considerable overlap in the various types of buildings. For the purposes of this analysis, the following types of companies are included in this sector:

- Modular and Mobile Home Manufacturers. These are factory assembled housing units, garages, school and farm buildings. They are produced from modular pre-assembled sections and use wood, metal and other materials. Mobile home units are often of lighter construction than modular homes and invariably include a metal chassis as part of the floor system. Even though some mobile homes are subsequently moved from their intitial site, many become permanent full-time dwellings. Moreover, the design of some mobile homes has become increasingly elaborate and, where these are permanent structures, the term "mobile home" is an inaccurate description of their actual use.

- Manufactured Home Manufacturers. These are architect designed homes, similar to conventional homes in all respects including materials used, but are produced in a factory rather than built on site. The designs of manufactured homes in Alberta available from companies such as Crawford, are varied and this form of construction follows a well established and growing trend in the U.S.

Most of the building units produced by this sector in Alberta are for residential use, and only a very small proportion of mobile homes find their way into other uses. Consequently, the market served is essentially part of the residential construction sector.

For various reasons CMHC, which is responsible for preparing and publishing regular data on housing activity in Canada, does not include all mobile homes in its statistics. As noted earlier, mobile homes traditionally have been regarded, quite validly in many cases, as temporary, movable dewllings and, therefore, could cause errors in CMHC's statistics through double counting. CMHC does, however, include some other types of pre-fabricated dwellings in its statistics. The major judgement criterion used is that of the degree of permanence. If the foundation is judged to be permanent, the mobile home is included in the statistics of conventional single family dwellings (see later in this section for further discussion).

Statistics Canada does not provide housing market data, but does publish data on pre-fabricated building production, the number of establishments by province and related data (Catalogue 31-205). Again, this does not fit exactly the definition of the sector as defined here.

However, the data provide a useful cross-check against survey data. The major differences include a small number of companies who occasionally produce either pre-fabricated timber based units, or who produce only components such as frames and chassis. These are classified for the purposes of this analysis in the manufactured home sector only if this is their primary activity and if they use wood products. Additionally, Statistics Canada data include some companies that are separately classified in this study as "Relocatable Structures".

In view of the fact that an increasing proportion of homes produced by this sector apparently are intended as permanent structures, the term "mobile home" has been avoided in this analysis. While it is acknowledged that there is considerable quality variation within the manufactured home sector thus defined, the intended market use is essentially the same-residential housing.

TYPES OF COMPANIES

Alberta is an important centre in Canada for the production of manufactured homes. Although national statistics are not available, B.C. and Alberta together account probably for more than half of Canada's manufacturing capacity. As discussed later, this reflects a number of factors including the special characteristics of regional markets for housing. Nevertheless, in serving the large western Canadian market for this type of dwelling, Alberta has developed a sizeable manufacturing industry and has stimulated development of support industries (including frames, trusses, millwork and cabinets).

Many of the companies in the manufactured home sector in Alberta are relatively large, some reporting that the number of their employees are in the 100 plus range under normal conditions. Recent activity in the sector nevertheless has declined due to general recessionary conditions nationally, sharply lower new house building activity, and permanent closures of some plants. Consequently, data provided on employee numbers, and sales revenues reflects the current state of the industry and not its maximum capacity. It is also significant to note that compared with other provinces, except B.C., the average size of manufacturers in Alberta is fairly large.

The larger companies tend to produce a limited range of standardized dwelling units while the smaller companies either provide a higher degree of custom building or serve small local markets. The high volume standardized producers are the most significant group. Their products are usually priced to meet buyers' needs at the lower to medium end of the conventional housing market. Competition for market share is substantial: consequently, these units are carefully designed to offer quality advantages at a reasonable price.

The traditionally low-quality image of pre-fabricated homes, which was prevalent in the early 1970's, and still lingers, has improved with the use of higher quality materials and construction. In terms of wood products, technological and design changes have provided scope for use of a much wider range of building materials than traditionally used (eg. waferboard instead of sheathing plywood, 2 x 6 instead of 2 x 4 lumber for better wall insulation, and the use of roof and floor trusses). Correspondingly, there is a growing

inter-dependence between the various sub-sectors of the industry. While some manufacturers produce some of their own components (eg. roof trusses), most purchase, from others, items such as cabinets.

Within the modular home sub-sector, some companies carry out only a limited amount of re-manufacturing of wood products, and instead mainly assemble sectional components produced by others (eg. Alberta Cedar Homes using components pre-cut in B.C.).

Another small but growing sub-sector is the production of log homes. Generally speaking, these manufacturers serve a fairly specialized market but companies reported that an increasing proportion of log homes form part of the residential housing market in Alberta, rather than being used as recreational homes. It is reported that there are about a dozen small firms, or individuals, producing log homes in rural Alberta.

MATERIALS USED

The principal wood materials used in the manufactured home industry in Alberta include:

- Softwood dimension lumber used for framing. Mainly #2 and better spruce from B.C. and Alberta, but also fir from B.C. and the U.S. Mainly random length, but a significant volume of studs used.

- Softwood lumber specialties. These include higher grade non-standard sizes, and specialty grades such as MSR (Mechanic Stress Rated). Most MSR is from B.C. and Alberta. Also included is a growing volume of roof trusses. Floor trusses are used to a much lesser extent, as yet.

- Hardwood lumber. Limited volumes, mainly imported tropical species, used in specialty custom built units. There were no indications that Alberta poplar species were used.

- Softwood plywood. Sheathing grades (CSP and DFP) used extensively for exterior sheathing, however, an increasing number of manufacturers are substituting plywood with waferboard. In roofing applications the same trend is apparent, but slightly greater thicknesses of waferboard replace plywood.

- Hardwood plywood. Traditionally lauan plywood has been used because of its ready availability and, formerly, its low cost. Rising lauan prices have resulted in a search for alternatives including birch and oak imported from the U.S. High grade decorative plywood increasingly has been replaced by overlays and laminates.

- Decorative composite panels. Problems with formaldehyde emissions from panelboards, particularly particleboards, using urea-formaldehyde have resulted in adverse public reaction to these boards in relatively confined and airtight spaces. Consequently, many manufacturers have substituted other types of boards and advertise their units accordingly as being "safe". Some manufacturers

reported that they have tried thin particleboards and thin-MDF, but find it to be less reliable than plywoods. An increasing volume of fire rated drywall with vinyl overlays is used.

- Mobile home decking. This is still used fairly extensively by some companies in the industry, but is also being replaced by waferboard.

- Fibreboard (hardboard). Used in a variety of applications in particular, as in conventional housing. Exterior hardboard siding is finding increased application as it offers an attractive range of finished low maintenance surfaces. Some MDF is used, but generally it is not a well known product in the industry as it is not yet produced in Canada. A few firms have imported experimental quantities from the U.S. for in-house production of built-in interior fittings. Some users feared that MDF, produced with urea-formaldehyde, would meet consumer resistance.

- Millwork items. Significant quantities of wooden window frames, door frames and pre-hung door units are produced either by the home manufacturers themselves or, more frequently, purchased from specialized producers. Strong competition exists, however, from metal exterior doors (for improved security) and metal/vinyl clad window frames.

- Cabinets and furniture. Some in-house production, but mainly purchased from specialized, high quality producers. Aesthetic overall appearance of the housing

unit's interior is considered a major selling point and some manufactured home producers install real wood (oak) cabinets instead of less costly laminated particleboard.

Although manufactured home production in Alberta is significant, a high proportion of the wood materials used for further manufacturing is imported from outside the province. B.C. produced lumber is highly competitive with Alberta's production and for some uses can offer a wider range of the higher quality species/grades required by manufacturers. In other cases (eg hardwood plywood) suppliers are not available locally.

ACTIVITY

The manufactured home sector in Alberta suffered a sharp downturn in activity in the province during 1982 because of adverse economic conditions and high interest rates. In 1982, the number of single-detached (conventional plus manufactured) housing units produced dropped by nearly 50 percent from the previous year and was significantly below the 1979 peak in housing starts (see Table 3.10). The manufactured home sector was particularly badly affected and a number of large producers shut down permanently (eg. Fleetwood).

TABLE 3.10

Single Detached Housing Starts in Alberta*

1972	12,182	1978	19,757
1973	13,839	1979	20,066
1974	13,511	1980	16,780
1975	14,989	1981	17,972
1976	17,765	1982	9,637
1977	14,298		

Source: CMHC

* Includes pre-fabricated housing units, including mobile homes, on a permanent foundation.

Statistics Canada reported that in 1980, 16 establishments, with annual sales of over $120 million, were classified as manufacturers of wood frame construction pre-fabricated buildings (Table 3.11).

Up to 1980, and probably beyond, the Alberta manufactured home industry accounted each year for a progressively larger share of total activity in the industry in Canada (Table 3.11). In 1980, for example, nearly 4 out of every 10 employees in the Canadian industry were working in plants in Alberta. The larger comparative scale of production, of the production plants in Alberta, is reflected in Alberta's growing share of total shipment volume, up from 30 percent in 1976 to 41 percent by 1980, even though the number of establishments remained at about 16 percent of the Canadian total.

In terms of value-added, in 1980 Alberta's industry accounted for 44 cents of every dollar spent on manufactured home production in Canada.

Within Alberta, few of the manufacturers are involved in any other activity (Travelaire also produces recreational vehicles) and, as noted above, most tend to be comparatively large units in order to benefit from economies of scale.

TRENDS IN THE INDUSTRY

It has been estimated by the National Association of Home Builders that, in 1980, approximately one-third of all U.S. housing starts were factory made. In almost all cases the manufactured homes are subjected to more sophisticated design techniques than units constructed on-site. This has not always been the case. In the early 1970's, most factory built housing used in Canada was purchased from the U.S. The design of the units was based on the need for a low cost unit for trailer camps and construction did not take into account Canadian building standards (i.e. CSA standards regarding insulation, wiring and construction).

TABLE 3.11

Pre-Fabricated Buildings
(Wood Frame Construction) Manufacturers

	1976	1977	1978	1979	1980
lberta					
umber of Establishments	15	13	15	16	16
otal Employees	1,787	1,566	1,743	1,746	1,608
alue of Shipments $000	108,920	99,216	117,408	123,608	121,547
otal Value Added $000	32,581	45,403	53,738	54,732	57,498
ercent of Total Canada					
umber of Establishments	17%	17%	15%	16%	16%
otal Employees	28%	29%	31%	36%	38%
alue of Shipments	30%	29%	33%	36%	41%
otal Value Added	23%	32%	36%	40%	44%

ource: Statistics Canada 35-205 (SIC-2543)

The industry in Canada developed rapidly in the early to mid-1970's and has closely followed demand trends towards larger sized (double wide) units and improved design. Units produced in Alberta are sold principally in western Canada. Traditionally there have been two major market segments: the retirement market and the young marrieds market. However, the increased range of higher quality homes available has met the needs of other markets and, in some designs, manufactured homes compete directly in western Canada with conventional on-site constructions.

The market potential for manufactured homes depends, essentially, on the balance between various factors. The scope for increased cost savings in materials and construction time, through economies of scale in production, has to be traded off against the localised traditional nature of the market (requiring a few housing units for each development) and the logistics and economics of long haul distances from factory to dealer to site. Nevertheless, it would appear that the overall trend in the new residential construction industry in North America, is towards the use of engineered components. Traditionally house-building has been a localised industry and the same has been true of pre-assembled manufactured homes which cannot be easily transported over long distances. Consequently, as demand for manufactured homes in Alberta and Western Canada grew, so did the industry.

Today, small builders and specialized trades still characterize the conventional on-site building industry. The economics of construction are still related to closeness to the market and adaptability to local styles and needs. However, manufactured homes, and modular sections, can offer significant advantages in terms of lower production costs,

faster construction and higher quality of construction. In large sub-divisions and developments they are particularly well suited, and are capturing an increasing market share at the expense of conventional site-built homes.

CONSTRAINTS TO GROWTH IN MANUFACTURED HOME DEMAND

The major constraints to further growth in demand are not, in all cases, long term obstacles. The sector still suffers from its association with 1950's type low quality "box" housing, but this public image is changing. In this respect, the U.S. industry is ahead of Canada's. Nevertheless, in considering future prospects for the Alberta industry, two policy aspects should be addressed. These are: land zoning by municipalities and mortgage financing by banks, trust companies and so on.

.1 Land Zoning

Land use policies and zoning regulations in some areas are reported to be constraints on the manufactured home industry. Further analysis shows that, providing zoning regulations are met, most areas in Alberta permit the development of fee simple lots. However, the availability of mobile home park spaces (including strata-title parks) is frequently reported by manufacturers and dealers to be limited.

.2 Mortgage Financing

The potential for further expansion of the Alberta manufactured home industry to meet the "affordable housing" needs of families in the province and in its export market in Canada, has been improved in recent years by a greater willingness of lending institutions to finance mortgages. In the mid-1970's, the sector was excluded from the AHOP program but, since that time, increased public interest, and improved government policies (eg. the Mobile Home Registry in B.C.) have led to greater acceptance of the sector as an integral part of the residential housing industry.

GROWTH PROSPECTS IN ALBERTA

The industry in Alberta grew, as already noted, in response to a rapid build up of demand for housing in sub-urban and rural areas in western Canada. Comparatively high levels of construction expenditure in the province (associated with large scale development projects) during the mid 1970's onwards, added another stimulus.

As discussed above, other factors, such as the greater scope for cost savings and technological improvements in the product, are now becoming increasingly significant. The transition period that the Alberta industry has been going through recently, appears likely to continue for the foreseeable future. Whereas in the past manufactured home producers were tied closely to dealerships, U.S. experience indicates that an increasing number could functionally integrate with real estate companies, developers, and builders where scope for large, carefully planned and landscaped housing developments exist in urban area.

U.S. experience shows that the opportunity for further development of the Alberta industry exists, however, the form of the industry seems likely to change and increased emphasis on planning and liaison with municipalities will be required.

3.9 MILLWORK

DEFINITION

The industry sector categorized as "Millwork" is primarily involved in architectural millwork for commercial and institutional buildings. Any work done for residential buildings tends to be limited since this would normally be considered as on-site carpentry undertaken by the contractor. An exception to this would be millwork required in public areas of multi-family units.

The principal areas of activity relate to finishing in stores, hotels, offices, schools, churches, hospitals and so on. Effectively all the work is on a custom basis and would include all the woodwork necessary to convert the area concerned into the final form in which it is to be used. This would therefore include:

- panelling
- cabinet fixtures
- stairs
- door and window trim and mouldings
- custom doors and windows when required
- custom furniture when required
- counters, shelving, showcases, etc.

An important area of activity also relates to institutional furniture. To some extent this overlaps the activity of the furniture sector but a number of millwork companies produce a significant amount of goods such as school desks and benches or hospital furniture. At present the

extensive government programmes on institutional development have resulted in a significant amount of work for the millwork companies.

The principal governing body for this industry sector is the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

In Alberta there are also two other associations:

- Northern Alberta Millwork Association
- Southern Alberta Millwork Association

These associations are affiliated with the Alberta Construction Association. It should be emphasized, however, that there are a significant number of millwork companies that are not members of any of these associations though, in general, it is believed that most contracts would be governed by the quality standards set out by AWMAC.

TYPES OF COMPANIES

A major problem in endeavouring to categorize companies under "Millwork" stems from the great disparity that exists between the companies, and the fluctuation in activity over time. Some companies employ as many as 65 people whereas others, due to current circumstances, have reduced to only two. Normally, a two man operation would hardly be regarded as a manufacturing industry, yet if the space, equipment and potential still exists for the employment of 15 people doing, say, $750,000 of business per year, the current level of activity could be misleading.

The majority of the work done by millwork companies is on the basis of tenders, either directly to the purchaser, or through general contractors. Many of the companies also act as general contractors. This leads to considerable confusion when endeavouring to relate activity, as identified by Statistics Canada under the definition of "Sash Door and Other Millwork Plants", to the millwork companies that actually exist. Thus, of close to 40 companies actually visited only five were specifically identified in the most recent (1980) Statistics Canada publication (35-205). Discussions with Statistics Canada in Ottawa indicate that, though a few of the companies did not exist at that time, the principal reason for the difference is that these companies are classified as part of the construction industry and not the wood industry. Another reason is that some companies were too small for specific identification.

The consequence of these differences is that the number of companies and the amount of employment in the millwork industry sector is substantially more than would be apparent from Statistics Canada information. The consultants estimate, on the basis of field interviews and discussions, that 750 to 1,000 people are directly employed in millwork in good years. Some of these would also be employed in installation, on-site, in addition to working at the plant.

Bearing in mind that the Alberta sawmilling and planing industry is recorded at under 2,400 it is evident that the millwork industry is of real significance. The value added impact is of even greater significance. In the primary industries (sawmill, etc.) the value added component, i.e. labour, overhead and profit, is about 40 to 50 percent of the value of sales. In contrast, for the millwork industry the value added component is closer to 60 percent or more.

MATERIALS USED

The principal solid wood products used by the millwork industry are hardwoods. Where softwood is utilized this is principally in high quality clear grades of Douglas fir and hemlock from coastal B.C. or the U.S., with some ponderosa pine from the U.S. The opportunity for the consumption of significant volumes of any solid wood product based on the Alberta forest resource appears negligible.

It should be noted, however, that the millwork industry does use some volumes of plywood and particleboard. To the extent that a high quality poplar plywood could be produced in Alberta the millwork industry would be a potential consumer. Past experience, however, with Alberta production of poplar plywood has been that the face veneers are of too low a quality, there are too many core gaps and the thickness of the veneers are too great.

There would also be an opportunity for industrial grade particleboard (or possibly MDF) either prelaminated or of a quality suitable for lamination by those millwork companies with their own press. This could certainly be produced in Alberta where, currently, there is no industrial grade particleboard plant. The volumes required by the millwork industry are not, however, very large and would amount to no more than 10 percent of the productive capacity of an economically sized particleboard mill.

It should be emphasized that the millwork industry has only limited control over the products and species that are used. These are essentially established by the architects, designers and specification writers. To the extent that a significant amount of the work done is for the

Alberta government, and bearing in mind that there are a number of situations where a sound tight knotted product that could be produced from the Alberta resource would be entirely adequate, opportunities for Albertan product could be developed. Some policy directive to government specifiers indicating that serious consideration should be given to the possibility of utilizing products based on Alberta resource, wherever possible, could have the effect of increasing the potential for Alberta product.

ACTIVITY

Current levels of activity in the millwork industry are very depressed in comparison with the amount of work being done two years ago. Many of the companies visited indicated that they were employing only half the number of people that they had in 1980/81. There are also some companies that have been unable to survive the depressed market conditions and have closed.

The percentage of successful quotations is an interesting indication of the state of the market. A typical comment was "We get less than 5 percent of the jobs we quote. Two years ago we probably got better than a quarter". Bearing in mind the amount of time and effort involved in working up a quotation it is evident that the current state of the millwork industry is very depressed.

There are no firm statistics upon which to base an analysis of the size of the Alberta millwork market. it appears, however, from discussions with the industry that it is somewhere in the region of $100 million per year.

Very few of the Alberta companies are able to obtain any jobs that are out of province. A significant reason quoted by a number of individuals was that other provinces give preference to resident companies. For example, the B.C. government has a very specific "Public Purchasing Policy" which insists that any work done for a government or crown corporation project should go to a B.C. company, unless the lowest B.C. quote is more than 10 percent above the out-of-province quote. Similar directives appear to exist in other provinces either overtly, as in the case of B.C., or by common practice.

Such a policy or practice does not appear to apply in Alberta. This is a source of considerable distress to the millwork industry since there are a number of instances where Alberta government jobs have gone to non-Albertan companies. The amount of such loss to the provincial industry is not known precisely but could be as high as 20 to 30 percent according to knowledgeable individuals in the industry. A principal factor quoted was the labour cost differential between Alberta and eastern provinces. This, apparently, more than offsets any freight disadvantage. The Albertan millwork industry feels that this is a factor beyond its control since it is a function of the provincial economy. Consequently, the province should at least protect the domestic industry to the same extent as do other provinces.

Of particular concern appears to have been the award of the Petro Canada contract, worth $1-1/2 million, to an out-of-province company. However, since this would presumably be under federal juristiction no provincial policy of favouring the domestic industry would be applicable. On the other hand, it has been suggested that some eastern provinces

provide their industry with certain incentives for work obtained out-of-province. If this applied in the case of Petro Canada, the Alberta millwork industry would appear to have some legitimate cause for complaint.

3.10 OVERHEAD DOORS

Though there are a large number of companies distributing, installing and maintaining wooden overhead doors, (mainly for garages) there are few actually manufacturing these in Alberta. Of these few the majority buy the door blanks from B.C. and add the necessary hardware to make the finished unit. In the context of this study it is judged that such companies are not "secondary manufacturers" since the wood is not reworked in any way. Similarly, the very minor amount of specialty custom designed doors produced by some of these companies has been excluded.

There appear to be only 2 companies actually manufacturing the wooden parts of overhead doors.

The principal raw materials used are high grade cedar, hemlock and fir with some volumes of lauan.

3.11 RELOCATABLE STRUCTURES

DEFINITION

This industry sector is significantly different from the mobile home industry which has been covered under section 3.8 "Manufactured Homes". Many of these relocatable structures are used as living quarters but they are essentially designed for industrial use. Thus the residential use is in connection with some construction and development site where sufficient housing may not exist. The units are also used for site offices and many other facilities such as schools.

Essential requirements, therefore, are that they can be easily moved and relocated and that they are totally self contained, requiring minimum of work at the site to become fully functional. Normally they would, however, remain at the site for several months or longer and must therefore provide semi-permanent accommodation. Relocatable structures are, consequently, significantly different to recreational trailers.

It has been judged that this industry sector should be included since, in addition to lumber use in the manufacture of the structural frames, it also uses a significant volume of secondary manufactured wood products such as cabinets.

Statistics Canada includes some of the companies falling into this category under the SIC number 2543 "Pre-fabricated Buildings - Wood Frame Construction". Others, however, appear to be included elsewhere, in classifications

such as SIC 3242 "Non-commercial Trailer Manufactures" or 3241 "Truck Body Manufacturers" or 3243 "Commercial Trialer Manufacturers" or even 3090 "Metal Fabrication".

It is worth emphasizing that the relocatable structure industry believes that it is an industry sector quite separate from the other industries. It has established "The Manufacturers Association for Relocatable Structures of Alberta" to represent its interests.

TYPES OF COMPANIES

There is one particularly large company which dominates the industry and several medium sized companies. Most of those contacted stated that their business covered manufacturing, leasing and sales of relocatable structures.

MATERIALS USED

In the majority of cases the lumber purchased by the industry is construction grade S-P-F from Alberta and B.C. This is used to manufacture the frame. The volumes are probably no more than 10 million board feet for the industry, even in good market conditions. Plywood is often used for flooring and metal is used for outside cladding. Decorative plywood, hardboard and vinyl overlaid gypsum board are all used for interior panelling.

The majority of those contacted indicated that interior cabinet work, which is a significant part of many of these structures, was usually sub-contracted to cabinet manufacturers. Doors also are purchased not manufactured. Windows tend to be aluminum and much of the mouldings and trim used to finish the units is vinyl.

ACTIVITY

Alberta is one of the principal centres in North America for the manufacture of relocatable structures. The industry expanded rapidly at the time of the oil development in Alberta and subsequently developed a strong export trade. Until the last few years the industry had annual sales revenues in the region of $100 million and probably employed around 800 people. This would include the sales and leasing activity in addition to manufacturing.

Currently, however, the industry is very depressed, particularly those companies that had not developed any business outside Alberta. A number of companies have temporarily ceased all manufacturing and are relying entirely on revenue to be obtained from leasing their existing units. Typical of this depressed situation was one company that used to employ over 100 people and now has just a small maintenance staff of less than ten.

It would appear that this industry might benefit substantially from a coordinated effort to diversify and explore new market areas where its output, or some modification thereof, can be sold. Without some such initiative it seems likely that a significant proportion of the relocatable structure manufacturers could cease to exist.

3.12 REMANUFACTURING

DEFINITION

The industry sector defined as "Remanufacturing" is a conglomeration of a number of companies carrying out a wide variety of activities. This sector therefore includes:

- companies that provide a custom cutting service for wholesalers, distributors, or consumers. These companies therefore don't own the lumber at any stage.

- companies that purchase lumber and remanufacture it into some other cross-section or length for sale to secondary manufacturing industries.

- companies that purchase lumber and remanufacture it into a variety of products such as survey stakes, laths, fencing, pallet stock, pallets, bed frames, panelling, hockey sticks, carpet grippers, containers and so on.

There is no specific section that covers all of this industry sector in Statistics Canada. Some are included under SIC 2513 "Sawmills and Planing Mills", whereas others are under 2599 "Miscellaneous Wood Industries".

Though part of the activity of some of these companies does not strictly qualify as secondary manufacturing, nevertheless value is being added to the raw material. It is therefore considered legitimate to include the "remanufacturing" sector within this analysis.

TYPES OF COMPANIES

None of the companies in this sector are large but there are a number of medium sized companies that have been operating for some time. In addition there are many very small operations working on a sporadic basis. This is particularly true of rural areas where farmers resaw fencing during the off season. It was not possible to obtain any reliable indication of the relative importance of this type of activity.

There are also a number of building supply and home centre companies which cut and resaw lumber. This is either for their own general sales, such as furring strips and so on, or as a service to particular customers. For example, one waterbed manufacturer contacted obtains S-P-F 2 x 10 stock precut and grooved by the retail lumber yard from which it obtains supplies. It has been judged that this type of remanufacturing activity does not properly qualify as "secondary manufacturing" or even remanufacturing.

MATERIALS USED

Due to the diverse nature of the activities included in this sector there is also a substantial variation in the raw material used. Companies that are remanufacturing in order to produce high quality mouldings and panelling purchase hardwoods and clear softwoods from B.C. and the U.S.

At the other end of the product scale the companies producing survey stakes and pallet stock tend to purchase low grades of S-P-F from Alberta and B.C. Some companies also use poplar from Alberta.

The total amount of lumber remanufactured by these different industries is very variable depending on the orders received. On the basis of the companies contacted it would appear that the approximate volume would be around 50 million board feet. The major part of this volume would be S-P-F.

ACTIVITY

Most of the companies sell their products principally within Alberta. However, some volumes of lumber that has been remanufactured for wholesalers is subsequently distributed to other parts of North America and much of the pallet stock is shipped to the U.S.

This industry sector, even though a conglomerate of a variety of companies, is relatively small. Annual sales values are probably in the region of $15 to $20 million with 150 to 200 people being employed.

Though there are a few new companies it does not appear that the remanufacturing activity in Alberta is expanding to any significant extent.

Bearing in mind the significant demand that exists in the North American market for lumber that is cut to sizes other than dimension (2 x 4, etc.) it would seem that a significant opportunity for expansion may exist. Options that exist include:

- panelling;
- fencing;
- pallet stock;
- home centre specification (1 x 2, 1 x 3, 2 x 2, in short lengths).

Markets exist for these items and the Alberta resource is suitable for their production. Site specific analyses are required to establish whether this type of production is economically feasible.

3.13 SPINDLES/TURNINGS/STAIRS

DEFINITION

Some companies in Alberta manufacture spindles and turnings of various types and stairs. These have been categorized separately from general millwork since they manufacture specific products. It should be noted that some millwork companies may also manufacture these products.

TYPES OF COMPANIES

Most of the companies are relatively small with only one exceeding an annual sales volume of $1 million.

MATERIALS USED

The largest company utilizes hardwoods exclusively. Some of the others, however, also use ponderosa pine and hemlock in clear grades.

It seems unlikely that the resource in Alberta could provide a suitable raw material for this industry.

ACTIVITY

The depressed nature of the economy has had some effect on the larger producers of production line spindles. However, since a significant part of the demand relates to markets other than new construction, this industry has not

been affected as badly as others, such as millwork. There are, in fact, some new companies, catering entirely to the custom design market, that are expanding rapidly.

3.14 TRUSSES

DEFINITION

For the purposes of this study the manufacturers of trusses are deemed to include companies that also produce beams. These beams can be either in the form of laminated wood with a solid cross sectional area or in the form of an I beam with flanges and a web.

Trusses and beams are used in all forms of construction; residential, commercial, agricultural and so on. They are utilized for roofs and for floors.

TYPES OF COMPANIES

The majority of the companies producing trusses undertake this activity as their principal business. Though many of these truss manufacturers have their own engineering staff, much of the basic detailed design work is provided by the truss plate manufacturers.

There are also a number of smaller producing units, often part of a building supply company, that manufacture trusses as an activity that is complementary to their principal business. Typically these companies produce fairly standardized roof trusses suitable only for residential construction. They often have no qualified engineering staff and rely entirely on the designs provided by the plate manufacturers.

There is only one company in Alberta producing laminated beams under the auspices of the Laminated Timber Institute of Canada. There are, additionally, other companies producing engineered joists with wood and a combination of wood and metal. Other variations, on standard lattice-type truss manufacture for construction use, include a company that also manufactures garage and small agricultural building kits, and a rehabilitation centre that produces lighter trusses primarily for the mobile home industry.

MATERIALS USED

The most widely used lumber is S-P-F though some fir is also required for specialized designs. Traditionally, the principal grade is #2 and better but in recent years there has been an increasing volume of MSR lumber. One company that specializes in industrial and commercial trusses advised that MSR lumber now accounts for up to 30 percent of lumber consumption. It seems generally agreed that, as the engineering design of structures becomes more sophisticated, the need for precisely graded lumber will increase. There will therefore be growth in the consumption of MSR lumber.

It is estimated that the annual volume of lumber consumed by the truss and beam sector is, currently, 30 to 40 million board feet, with 2 x 4 accounting for 70 to 80 percent. Of the balance 2 x 6 would be the largest size, followed by 2 x 3 for web construction.

Truss manufacturers usually purchase lumber on a random length basis and it seems unlikely that many would be interested in cut to size components. The variety of length required makes this approach unworkable.

One company is also purchasing veneer and plywood to manufacture specialty joists.

ACTIVITY

A significant characteristic of the standard truss industry is that the bulk of sales occur within about a 100 mile radius of the plant. There is, therefore, only a small volume of import or export and the Alberta consumption of trusses is effectively satisfied by Alberta production. This does not hold true for specialty products such as laminated beams, specialty joists and oversize trusses. Since there are relatively few manufacturers of products of this nature they can compete over a much greater distance.

The drastic reduction in housing starts since 1978 has had the inevitable effect of substantially reducing the activity in the truss manufacturing industry. To some extent, however, the industry has been able to offset the decline by expanding into other areas. Five years ago most companies concentrated principally on pitched roof trusses for residential construction. Penetration of this market reached saturation with 90 percent of housing using trusses, rather than rafters. The new area of growth is the parallel cord truss for floors and non-residential buildings. In discussion with the truss industry it was found that two thirds of those contacted are now able to produce floor trusses.

This is a market area that has considerable growth potential as designers and architects become aware of the increased design flexibility in comparison to solid wood joists. As this market grows the need for MSR lumber will also increase, particularly in the higher stress grades.

Another development of particular interest to Alberta is the I-beam using waferboard for the web. Though it is unlikely to represent a high volume market it is nevertheless a new potential use for waferboard.

3.15 WINDOWS

DEFINITION

Many of the companies producing windows also produce patio doors and french windows. Thus it is sometimes difficult to establish the right category for some of these companies. It has been necessary, therefore, to make some arbitrary decisions in order to decide whether a company should be shown under the business class of windows or doors. These decisions have been based on an understanding of which product line tends to be the most important. No such problem exists in the Statistics Canada definition since all the companies are included under the one definition "Sash, Door and Miscellaneous Millwork".

The companies contacted were principally those involved in the production of windows that include a substantial amount of wood. Furthermore, only those industries actually manufacturing in Alberta were considered. Consequently, companies primarily involved in distribution or those which received parts pre-manufactured at their plants elsewhere and shipped to Alberta for assembly were not inlcuded. On the other hand, companies that buy much of their lumber already profiled, and even cut-to-size, from various sources are included. It is judged that these companies must be considered secondary manufacturers even if they are subcontracting some part of their production process.

This is not to be considered as inconsistent with the approach taken relative to doors. In that case, companies which were buying doors and mouldings in order to undertake a prehanging operation were excluded. This exclusion was on the grounds that the process was part of installation not door manufacture.

TYPES OF COMPANIES

There is one company which, together with its associated company, dominates the manufacture of windows in Alberta. In addition there are several smaller companies manufacturing production line windows, though these are ususally of a somewhat more specialized nature. Apart from these there are also many companies producing custom designed windows for commercial, institutional and residential construction. The bulk of these are not covered under this section since they are included under millwork.

MATEIALS USED

The type of lumber used depends on the nature of the window being manufactured. In the case of an exposed wood frame the lumber utilized must be free of any defect. Where it forms the core for overlay by vinyl or aluminum the specification can be less demanding.

The major species used is ponderosa pine, either solid or finger-jointed. Hemfir in clear solid grades is also used but to a lesser extent. Some volumes of spruce with sound tight knots are also used in the less critical parts of the windows.

A number of the companies, including the largest, purchase their lumber with the required profiles already manufactured. In some cases these profiles are being run on a custom basis by remanufacturers in Alberta. There is one wholesaler/distributor who specializes in the purchase of lumber and arranges for its remanufacture into suitably profiled stock for window and door manufacturers. This company suggested that many of the required specifications could be produced from the Alberta resource, if the sawmills manufactured and dried their lumber in the necessary manner.

It should be noted however that this was not the view expressed by some of the window manufacturers. One advised that, even where sound tight knot lumber was acceptable, neither spruce nor lodgepole pine were satisfactory. Spruce could only be used in small dimensions of less than 2" width and lodgepole pine was totally unacceptable. In both species the lack of dimensional stability was a problem and the number of knots in lodgepole pine was identified as being a further disqualification. These comments were based partly on experience but, it is believed, principally on generally accepted understanding of the species. It is still possible therefore that if the lodgepole pine is manufactured and dried appropriately for this use it may, in fact, provide an adequate substitute for the material imported from elsewhere in some of the window parts.

A research programme involving the cooperation of sawmills and window manufacturers, would be required. If it can be established that, technically and physically, the species is satisfactory the next step would be to establish whether it is economically feasible, in competition with the material currently being used.

ACTIVITY

A significant proportion of the windows used in Alberta is produced in other provinces. At the same time, however, some of the Alberta production is sold to other provinces. On balance, the volume of imports far exceeds the volume of exports.

Though current levels are considerably less, the sales volume for 1981 is believed to have been in the region of $100 million. In the opinion of those consulted, around half would have been produced in Alberta and the remainder would have been from other provinces. Window manufacturers in Alberta employ about 500 people.

As would be expected, window consumption is largely influenced by construction activity - in particular residential construction. The housing start levels of 1982, and currently, have had a very depressing effect on the window industry and many companies are operating at close to half of their previous levels. On the other hand there are some distributor companies which had been based on the supply of windows from out of the province which have closed down. Provincial production will therefore be well placed when construction activity resumes.

If it can be shown that the Alberta resource is able to provide an adequate raw material for a significant part of window manufacture, this industry sector would have the potential for expansion within Alberta.

SECTION 4.0

MARKETING OPPORTUNITIES OUTSIDE ALBERTA

4.1 SUMMARY

The great majority of the secondary manufacturing industry in Alberta is not based on the Alberta forest resource. Furthermore, the output of the industry is principally destined for consumption within the province. Analysis of the resource indicates that Alberta has no intrinsic advantage, relative to other timber supply regions, on which to base the development of a secondary manufacturing industry.

Conversely, there are a number of products which could, technically, be manufactured in Alberta, at no obvious disadvantage relative to other regions. The objective of the market survey was to identify some of these products.

Since many secondary manufactured products are consumer oriented, directly or indirectly, the emphasis of the survey was at the retail level to establish the potential for solid wood products other than dimension lumber.

The D-I-Y (do-it-yourself) consumer is purchasing increasing volumes of wood products. Studies in the U.S. suggest that the D-I-Y segment will increase dramatically during the 1980s from U.S.$26.5 billion to U.S.$92 billion. A significant part of this sales volume is in wood products. Consequently it is a market area that holds great potential for expansion - unlike the construction market.

The areas visited were Toronto and various cities in the U.S. The essential results of the market survey are summarised in Table 4.1. The product lines that appear to offer opportunity for secondary manufacture in Alberta are

pine furniture, interior shutters, panelling and laminated boards. Additionally, though it is not secondary manufacture, there is a long term growth opportunity for MSR lumber. Home centre dimensions also have potential for innovative marketing to U.S. customers and window components may offer some opportunity.

It must be emphasised that these are apparent areas of opportunity after taking into account any obvious competitive factors. Estimated production costs were not calculated. These could be analysed in general terms and compared with likely FOB plant returns, but to obtain a true picture of the economic viability of servicing any of these potential markets it would be essential to undertake a detailed feasibility study. It is worth expanding on this comment by taking one particular prospect. From the market point of view, one of the most promising areas of potential is the unfinished pine furniture market. However, whether a manufacturing industry serving this market and based on the Alberta resource would be economically viable can only be resolved by a detailed analysis of all the factors involved. These would include availability and cost of suitably manufactured raw material; alternative production equipment and techniques; the designs of furniture to be produced; costs of alternative marketing and distribution approaches; price levels for various product lines. No investment in manufacturing facilities would normally be undertaken without this type of feasibility analysis.

There is also the potential for exporting value added products. One of the most interesting possibilities relate to lodgepole pine for the European market. This would be the output from primary rather than secondary manufacturing and will require a fundamental change in approach by the sawmill if the potential is to be realised.

TABLE 4.1

CONCLUSIONS ON MARKET OPPORTUNITIES

	Toronto		U.S. Mid West	
	Comments	Rating[1]	Comments	Ratin
lling	small but growing market very competitive	fair	demand likely to grow substantially very competitive	goo
ıated is	new market, small, growth potential depends on price	good	not in stores at present, potential will depend on price	fai
:ers	all imported, steady market	good	large market supplied by relatively few U.S. companies	excel ent
lture	new market with strong potential	excell-ent[2]	rapidly expanding market	excel ent[2]
ar-joint-ımber	- construction; only for special projects	poor	specialty lengths in wider widths	poor
	- mouldings; large market currently supplied by ponderosa and eastern white pine	good[4]	large market based on ponderosa pine	good
ł.	market growing and likely to increase drastically in long term	excell-ent	growing use as building technologies change	excel ent
lng	strong market with variety of products	poor[5]	large market and growing, whitewood fencing popular, supply currently tight	fai
ıg	only part of market is wood & cedar is the major species	poor	spruce has a very poor image	poo
Centre ar	strong market increasing volumes	poor[5]	large and expanding market	goo
ow onents	manufacturers use ponderosa and local pine	poor[5]	major manufacturer interested in using lodgepole	goo

natory Notes:

ated as market potential for Alberta production without considering production conomics but taking into consideration known competitive factors.
rovided suitable product is manufactured by saw mills. There is also a potential aw mills to market furniture grade lumber.
ote that there is a growing market for finger jointed studs in other areas of U.S. hough rated good current understanding is that it would not be economic to produce oo much local competition.

4.2 INTRODUCTION

It has been evident, from the analysis of the solid wood product secondary manufacturing activity existing at present in Alberta, that the great majority of this is based on raw material that is imported into Alberta. This industry provides employment for several thousands of Albertans and provides a valuable service to the province. It does not, however, add much value to the Alberta resource.

A basic consideration, therefore, in analysing opportunities in markets outside Alberta for secondary manufactured products has been that the raw material for the product must be available from the Alberta resource. Essentially this is white spruce and lodgepole/jack pine, for the purposes of this study. The opportunities for poplar/aspen are being analysed elsewhere and the volumes of other species are negligible.

The potential for product development and the development of the necessary industry will depend on a number of factors. These can be summarized as follows:

- nature of the raw material;
- location of market;
- production costs (labour, energy, capital);
- technical expertise or reputation.

The advantages and disadvantages for Alberta, relative to each of these factors, needs to be considered.

The nature of the resource automatically excludes a number of product options. For example a product that demands cedar or redwood need not be considered. Similarly, where long lengths of clear lumber are necessary the resource is effectively unsuitable. Even the production of a finger-jointed knot-free product may be questionable bearing in mind the large number of knots in the raw material available. Furthermore, for products that can be produced from the species that are available, Alberta has no unique advantage in comparison with a number of other timber regions in Canada and the U.S. In other words, a secondary manufacturing industry located in Alberta using spruce and/or pine solid wood could equally be situated in B.C., Quebec or Idaho (to quote a few examples) without incurring any intrinsic disadvantages relative to raw material.

A secondary product industry located in Alberta would have obvious locational advantages in the Alberta market. Equally it would have obvious disadvantages in the Toronto market relative to a southern Ontario producer of the same product. However in Minnesota, for example, the differences in cost of transportation from Quebec, Idaho or Alberta are not very great - particularly for a high value product. In the mid western U.S. market, therefore, the Alberta industry should not have any particular locational disadvantage.

The labour costs in Alberta tend to be high relative to most of North America. On the other hand, energy is relatively inexpensive and capital is available within the province for provincial industrial development. There are therefore some offsetting factors which could reduce the apparent labour cost disadvantage. It would appear that a substantial degree of automation would be an essential feature in order to reduce the impact of high labour costs and thus avoid any competitive disadvantages.

The final aspect to consider is more intangible and less easy to analyse. There are many examples where industries have developed in a region even though there may not be any obvious current competitive advantages relative to raw material, market location or production costs. Such an example is in Alberta, where there is an extensive concentration of the North American production of relocatable structures. Though this started due to local demand developing from oil exploration, there are now many companies involved, with exports all over the world. The basic reasons are the development of a pool of expertise in the area and the fact that Alberta has become known to be a centre for relocatable structures.

Consequently, though Alberta has no particularly outstanding advantages upon which to base and encourage secondary manufacturing in solid wood products, there are also no very substantial disadvantages which cannot be overcome. Given this somewhat neutral basic position, it becomes necessary to identify specific product or product line "niches" in the market and aggressively pursue the development of a suitable industry.

An initial overview of the many products being manufactured from solid wood indicated that the best use of the time, allocated within the study to marketing, would be an analysis of the requirements at the retail level. This would identify the types of products required not only by the construction trade but also by the home improvement and DIY (do-it-yourself) consumers. This latter group is becoming of increasing importance. In 1982, in sharp contrast to the disasters in the construction market, the volume of DIY sales by the top 100 home centre chains in the U.S. grew by almost 37% over 1981. During the 1970's the DIY segment of the U.S.

home improvement industry increased from $6.4 billion to $26.5 billion, according to the DIY Research Institute. The Institute projects that during the 1980's this will increase dramatically to $92.1 billion.

The growth for the DIY segment is expected to be greater than that of the home improvement market and certainly greater than any growth expected in new construction. This segment is also of particular importance since many of the secondary manufactured wood products are bought by the DIY consumer.

The importance of the home improvement market, serviced by the home centres, should not be underestimated. The growth projections are impressive but, even at present levels, the sales volumes of wood products through the home centres in the U.S. are very large. In 1981, according to Home Center Magazine, the sales of lumber, doors, windows, millwork and wall panelling amounted to about U.S.$18 billion. Assuming a gross margin of 40 percent at the retail outlet this represents forest product sales of over U.S.$10 billion. Though part of this is transportation cost nevertheless the total sales returns to the forest product industry from home centres is substantial.

To set these figures in context it is worth noting that the total value of all shipments of all wood industries (primary and secondary but excluding pulp and paper) in Canada is only in the region of U.S.$7 billion.

The geographic areas chosen were as follows:

Toronto - to obtain an indication of the activity in the largest single Canadian market and also to hold discussions with the appropriate people in some of the principal national chains.

U.S. Midwest - a significant share of the lumber sales to the U.S. from Alberta go to this area due to current transportation rates. The states visited were:

- Illinois
- Missouri
- Kansas
- Minnesota
- Wisconsin

The head offices of a number of large chains and buying groups are located within these states.

The product categories investigated during the discussions related to any product of solid wood, other than dimension lumber, that was in demand by the consumer. Opinions were sought from the merchandising and purchasing managers in the various companies regarding trends and new opportunities that could be satisfied by a secondary manufacturing industry in Alberta. It is worth emphasizing that the bulk of those contacted were extremely helpful since it is in their interest to encourage the development of more supply sources.

Though there are a large number of product lines that could, theoretically, be feasible, the discussion focussed on particular products that seemed most likely to offer potential to Alberta. Since separate studies are being undertaken on the prospects for treated lumber and the opportunities for products manufactured from poplar/aspen these two areas of opportunity are not discussed.

4.3 TORONTO

A list of the companies and groups contacted is shown in Table 4.1. The essential conclusions to be drawn from the discussions are presented below, by product line.

PANELLING

The consumer has a substantial number of product options from which to choose when wishing to finish a wall. He must decide between paint, wallpaper, 4' x 8' panels, solid wood panelling and so on. The product group of relevance to this study is solid wood panelling. Even within this group there are many choices - thicknesses vary from 1" down to as little as 1/8"; widths vary from 8" to 4"; there is a choice of species (many hardwoods, cedar, redwood, Douglas fir, various pines); the quality can be clear, knotty or extremely "rustic"; the products can be bought in shrink wrapped bundles or in loose boards.

Consequently, though the wall decorating market is very large there is also a great deal of competition. The share of solid wood, within the wood product sector, i.e. 4' x 8' panels and solid wood, is very small, at no more than 5 percent, but it appears that there may be some trend towards solid wood. This had been strongly evident two years ago but the recent recession caused the consumer to return to cheaper alternatives of printed or overlaid 4' x 8' panels. It is believed that the economic recovery should re-establish that trend.

However, it must be emphasized that there are many producers of solid wood panelling - a significant number of them being in eastern Canada using eastern white pine. It is also important to note that there have been a number of B.C. producers of solid wood panelling that have experienced extreme financial difficulties in recent years. The majority of these had been producing a shrink wrapped bundle 8' long, containing nested shorts, of tongue and grooved V-joint panelling, 4" wide and 5/16" to 3/8" thick, covering about 20 square feet. These were available in clear and knotty cedar and in a sound tight knotted grade of pine.

The Alberta pine resource would be very suitable for the production of this type of product. There is, however, a lot of competition and the essentials for successful operation would be strong distribution arrangements and attractive product presentation. For the Toronto market the volume potential would be considerably increased if other profiles, such as the Pickwick pattern, are produced. Some chains, for example Canadian Tire, only carry this pattern.

LAMINATED BOARDS

Though it is not a new concept there has been considerable interest recently in the development of edge glued boards. These can be sold in various forms:

- shelving;
- parts of component furniture systems;
- general use of the DIY handyman.

The reactions from those visited in Toronto were extremely mixed. Canfor has recently commenced a program based on component shelving systems and believes there is a strong potential for this product.

Cashway Building Centres, a major chain, disagreed. This group had tried laminated boards in 15 outlets and in only three were the results favourable. It did not seem to be a question of price since various pricing levels had been tried. The company admitted, however, that there had been no very serious promotional effort devoted to the product.

Beaver Lumber believed that a market certainly existed but questioned whether the volume would be very substantial.

Lansing Buildall, a seven store Toronto chain catering to the affluent suburban trade, felt there was good potential particularly in full 10" and 12" widths. This company also suggested that there might be a market in thicknesses up to 1-1/2" for the wide boards in 8' and shorter lengths. Price would depend on quality and would have to compete with other solid wood pine boards. These currently range from $900 per thousand board feet #1 grade to $1,500 for a "select" grade of eastern white pine delivered Toronto in 10" and 12" widths. A laminated product with a limited number of sound tight knots could sell close to the top of the range quoted, according to Lansing.

The resouce in Alberta should be suitable for the production of this type of product and it appears that there could be a significant value added component to be obtained. A market opportunity appears to exist but whether the economics would justify a production facility would need careful analysis.

SHUTTERS

Pine shutters for interior use are evident in almost every home centre outlet. It was difficult to obtain any indication on the size of the market in Toronto, or any other area, but the consensus was that it represented a substantial dollar volume.

Home-care, a buying group for 110 different companies, believed that shutter sales represented a significant and very steady market. Individual store volumes were not large but the turn over was good and all stores handled them.

Almost all are being imported from U.S., Portugal and also, in hardwoods, from S.E. Asia. There appears to be very limited production within Canada. In Portugal shutters are produced from maritime pine, a species with no advantage over lodgepole pine. In the U.S., eastern white pine is used by one large producer in the state of New York and ponderosa pine is used by a number of producers in Texas. It is interesting to note that Texas has become a production centre, even though neither the raw material nor the market is in Texas.

Only clear lumber can be used for shutter manufacture but the majority of lengths are short. Technically, therefore, it would seem likely that the Alberta resource would be suitable. Whether it would be economically practical is, however, extremely difficult to prejudge. Extensive yield analyses, relative to the necessary manufacturing process and the individual piece lengths required, would be necessary.

FURNITURE

There are two different sectors of the furniture industry as it relates to the opportunites for pine. Finished pine furniture, selling through regular furniture outlets, appears to be only a limited market in Toronto or, indeed, the bulk of Canada. There are a few, relatively small, manufacturing companies, mostly in the east and none of the big companies appear to produce any significant volumes of pine furniture.

The potential for unfinished pine furniture, however, appears to be significantly greater. There has been a dramatic change in this market over the last few years. Some time ago "unpainted furniture" was essentially a very low cost product, using low grade materials. This is changing in Canada and has already changed significantly in the U.S. Information on this market sector is given in greater depth in section 4.4 dealing with the U.S. market.

Since the quality unfinished pine furniture market is still in its infancy, there was no consensus on the potential. A number of companies were convinced that the knock down (K-D) furniture approach was not one that suited the Canadian buyer. At the same time, one of these companies, Woolco, went on to state that the Ontario market was developing well for unfinished furniture. It seems that a compromise approach, where the retail outlet receives and stores the product in K-D form but presents and sells it fully assembled, may be appropriate. There is little significant difference in the effect on the manufacturer, whichever of these routes is best.

The Bay/Simpsons has underway, currently, a test market program in Winnipeg for both a high and a low line pine furniture. This is being promoted in the hardware section not in the furniture section. Clearly, therefore, this company believes there is some potential.

Companies such as Lansing and Castle also believed that a "mix and match" pine furniture component program could have a good potential. Furthermore Canfor is now offering, essentially as a development from its laminated shelving system, simple desk/table furniture in pine.

There are, however, companies such as Beaver, Cashway and Canadian Tire which were considerably less positive about the potential in their outlets. Beaver had tried, with little success, some time ago. Canadian Tire believed that, though unfinished furniture may have potential, it was questionable whether pine was the right raw material.

It is important to note that there is an expanding industry in S.E. Asia producing K-D furniture - even in pine from New Zealand. This is a very competitive area and even after paying freight and import duty into Canada (17.5% or a preferential rate for 11.5%) can land goods in Canada at extremely low prices.

Only a limited amount of information is available on the qualities of the Alberta pines compared with ponderosa or eastern white pines relative to machinability, the effects on cutting tools or the energy required. Informal discussions with staff of Forintek in Vancouver suggest that the pine from Alberta should have no significant disadvantage in terms of the quality of finished surface.

It would therefore appear that, given that a market exists for furniture produced from pine with sound tight knots, the Alberta resource can provide a suitable raw material. It is expected, however, that this would need to be cut specifically from the log and could not be developed or remanufactured from stock that has been cut for dimension lumber. Further analysis of grade and dimension requirements would be necessary to define exactly how this problem, and the problem relative to disposal of fall down, could be resolved. The approach to both grading and drying would also have to be changed from that used for dimension lumber. Appearance, and type and position of defects become very important. Similarly, a fast drying schedule resulting in 19% moisture content would no longer be suitable. Careful drying down to around 10%, with the maximum relief of inherent stresses, would be essential.

If the primary saw milling industry can provide this type of raw material it would appear that the opportunity exists for a secondary manufacturing industry producing a quality pine furniture in Alberta. Later comments in this study on the potential in the U.S. would appear to reinforce this optimistic outlook.

FINGER-JOINTED LUMBER

It appears generally agreed that the Toronto market is not ready for finger-jointed studs or dimension lumber in standard lengths and sizes. A limited market exists for special construction projects where lengths over 22' are required in 2 x 6 to 10 lumber. This is not, however, a large volume. At the retail level, it appears that the consumer still views any finger-jointed construction lumber with a great deal of suspicion.

There is, on the other hand, a large market for finger-jointed door jambs. These must, however, be free of any defects and it appears generally accepted that it would not be economic to produce such a product from the Alberta resource with its large number of knots. An analysis of yields and manufacturing costs would be required to establish whether this generally held view is in fact valid, bearing in mind the likely increase due in the prices of ponderosa pine.

OTHER PRODUCTS

There are some other lumber products which could have potential and which were investigated in Toronto. These are not, strictly speaking, the products of secondary manufacture but can represent upgrading or additional value to the primary producer.

Mechanically stress rated lumber (MSR)

The long term potential for this product is excellent and, as yet, there are no producers of MSR lumber east of Alberta in Canada. New building codes and new building technologies will increase the demand for MSR lumber. This subject is discussed in considerable depth in a study entitled "The Market Potential for Mechanically Stress Rated Lumber".

Fencing

All outlets carry a variety of wood fencing products in cedar, treated wood and whitewood. However, the market for white wood fencing in the Toronto area would be difficult to penetrate from Alberta. There are many potential suppliers in Ontario and Quebec and the fencing is essentially a low value product recovered from low grade lumber.

Siding

A market still exists for wood sidings even though hardboard, aluminum and vinyl sidings now dominate the new construction market. Cedar holds the major share of the remaining market for wood. As cedar prices rise there may be some opportunity for spruce siding but it is felt that the prospects for Alberta production in the Toronto market are not attractive.

Home Centre Lumber

Short lengths and small sizes such as 1 x 2, 1 x 3, 1 x 4, 1 x 6 and 2 x 2 move steadily through the retail outlets. The margins obtained by the stores for these sizes are very substantial. However, the ready availability from eastern mills of these sizes in truck load quantities would make it difficult for an Alberta producer to compete.

TABLE 4.2

List of Contacts Made in Toronto

Canfor Ltd.
Lansing Buildall
Ikea
Cashway Building Centres
Beaver Lumber Co. Ltd.
LBMAO (Lumber and Building Materials Association of Ontario)
Mason Windows Ltd.
Homecare Building Centres Ltd.
Government of Canada - Regional Industrial Development
Government of Ontario - Ministry of Natural Resources
F.W. Woolworth Co. (Woolco)
Hudson's Bay/Simpsons
Canadian Tire Corporation Ltd.
Ontario Furniture Manufacturers Association
Castle Building Centres Group Ltd.
Abitibi-Price

4.4 UNITED STATES - MID WEST

A list of the companies and groups contacted is shown in Table 4.3. A number of those interviewed represented large chains. As a result, the information gathered represented the current experience of about 600 outlets with annual sales in the region of $1.6 billion. In addition to discussions with the merchandising and purchasing personnel a number of the retail outlets were also visited. This allowed the consultant to obtain first hand impressions of how the various products were being presented to the public.

PANELLING

The variety and the competitive nature of the wall decorating market in the U.S. is even more overwhelming in the U.S. than that described for Canada. The views regarding the growth potential for solid wood panelling vary significantly. In areas surrounding large centres of population such as Chicago and Minneapolis/St. Paul the prospects appear to be excellent. For example, Fullerton Lumber suggested that the volume could increase by more than five times in the next few years. Others such as Knox indicated that they had doubled their sales in the last year. It must be emphasized, however, that this was from a very low volume.

In contrast, rural areas and also the smaller cities do not appear to show much interest. The retail outlets visited in St. Louis and Kansas City had very limited, or no, solid wood panelling on display. Whether they are simply at an earlier point on the product growth line or whether consumer attitudes are fundamentally different is difficult to ascertain. It was suggested that the former was probably the case since these areas tend to be more conservative.

It seems clear that the market is changing. The demand for 4' x 8' sheets of imitation wood is declining as consumers look for something different. There is a perceptible trend towards a greater awareness of quality and a willingness to pay for it. Home owners are foreseeing the need to stay longer in their houses and are upgrading their surroundings by home improvement.

The major problem is the large number of products available on the market. Retail outlets are unable to display and maintain stocks of everything. They must, therefore, choose certain lines. The producer with a strong distribution network and good product presentation is the one that will succeed. Price is certainly important but not to the same extent as a commodity product. Provided that a well presented product can be retailed for $0.75 to $0.85 per sq. ft. it should have good potential.

LAMINATED BOARDS

Laminated pine boards have been sold in the past in the areas visited but not one of the companies contacted were currently handling this product. Recent promotional efforts by two companies promoting laminated boards so far appear to have met with little success. Edward Hines Lumber Co., a Chicago based chain, used to market a similar product produced by one of its subsidiaries. The subsidiary has been sold and Hines indicated that it is unlikely to pursue this product line from outside suppliers.

The difficulty appears to be that no market "niche" is readily apparent. The shelving market is essentially controlled by particleboard with an overlay finish. There are also speciality items such as heavy solid pine boards and edge glued oak. The great majority of those interviewed felt that a laminated pine would not be of interest to them in this context.

The concept of component furniture systems, as being considered in Toronto, did not produce much enthusiasm. Almost none of those contacted had given this possibility any thought but their initial reaction was negative.

The sale of laminated boards to the DIY consumer for general use seemed more likely to have some success. The product would, however, have to compete with ponderosa pine boards currently being offered. It was believed that the consumer would be unlikely to pay any more than for solid wood and would probably expect to pay less. Advantages relative to stability and so on would be difficult to promote. There could be a market in widths greater than 12" but it was suggested that the consumer is now accustomed to looking at panel boards when wider widths are needed.

It is the consultants' belief that this somewhat negative view of the potential as expressed by the retailers is unduly pessimistic. There is no doubt, however, that prices will be important. The relationship between future prices for wide ponderosa pine boards and the raw material from which the edge glued boards can be made will be critical. The ponderosa pine resource is declining both in quality and quantity. Therefore prices seem likely to rise at a faster pace than those for the lower grades of S-P-F dimension lumber. As the gap widens the economic viability of edge glued board production will become more attractive.

SHUTTERS

As in the Toronto area, most of the outlets visited in the United States carried interior pine shutters. These were all manufactured domestically but by relatively few companies. They were usually well placed in the store and occupied a significant amount of display space.

The companies visited did not regard shutters as a major market but indicated that they were a line with good margins and steady movement. Menards, for example, advised that it expected to get 6 or 7 turns per year and that the average store would take about 150 sets per shipment. The most popular sizes appear to be 6" x 20", 7" x 20", and 6" x 28".

There are no statistics available on the size of this particular niche. However, if Menards are representative then it would seem likely that the home centres alone probably sell about $100 million of shutters annually. In addition hardware outlets and national chains such as K-Mart are likely to sell considerable volumes.

It appears likely, therefore, that a very substantial market, in total, exists. The comments regarding production and economic feasibility made relative to Toronto in Section 4.3 should be noted.

FURNITURE

"The Bare Truth: Unfinished Furniture Soars". "With sales of over the $1 billion mark last year and a 25 percent increase predicted for 1983, unfinished furniture is proving its value to the industry".

Comments such as this quote from the May 1983 issue of Furniture Design and Manufacturing are appearing in a number of furniture and interior design magazines. The image of unfinished furniture has totally changed. Most of the unfinished manufacturers are now producing high quality products.

About half of the furniture is produced in hardwood - mainly solid oak. The rest is pine and is divided approximately equally between high quality clear pine with no knots and pine with sound tight knots. This would suggest that the market for furniture that could be produced from the lodgepole pine available in Alberta is currently over $250 million in the U.S.

Sales are handled through various channels. There are now about 7,500 speciality stores across the U.S. which concentrate on unfinished furniture. A typical franchise group is "Naked Furniture". This chain started only 3 years ago and by May 1983 had opened 58 stores. By July 1st this will be increased to 73 stores.

High volume chains such as K-Mart also feature selected product ranges, usually the less expensive lines. Some home centre groups also carry unfinished furniture but with varying success.

In total the Unfinished Furniture Institute estimates that there are about 10,000 retailers handling the product. The big population areas such as Los Angeles and Chicago have been the leaders but all areas are showing growth. Unfinished furniture is particularly popular in suburban areas where buyers have the space to work on their purchases to finish them.

There are currently estimated to be about 700 manufacturers and the pine being used is primarily ponderosa or eastern white. One of the largest, "Harris of Pendleton", Oregon, was contacted. This company uses only ponderosa pine from its own sawmill but conceded, in discussion, that lodgepole pine might be adequate for some product lines.

Full information on all the manufacturers is available from "The Source Book" published by U.S. Expositions Inc. (1850 Oak St., Northfield, Illinois, 60093) at a price of $35.

The same company also runs a number of trade shows on unfinished furniture. The next one, the eighth, will take place from July 31st to August 3rd, 1983 at the O'Hare Exposition Center in Chicago. It is essentially a show designed for buyers and producers of unfinished furniture. It would, nevertheless, offer an excellent opportunity for an Alberta company that is interested in either producing a furniture grade or actually manufacturing furniture. The types of products and the specification of lumber required could both be seen.

The next show after this is scheduled for March 1984 in Las Vegas.

FINGER-JOINTING

Finger-jointing in order to remove all defects and achieve clear lumber is acceptable in the market for mouldings, doors and windows. Finger-jointing in construction lumber is not accepted in the markets visited. Even finger-jointed studs, which have an excellent market in Texas, appear unsaleable in the mid-western states.

There is some specialty demand for lengths in excess of 20/22' which can often only be supplied by finger-jointing. This is not a large volume since architects tend to avoid designs that demand such specification. Many are also

unaware of the potential availability of longer lengths. As the availability of supply from companies such as The Pas in Prince George, B.C. becomes better known, the architects may well welcome the additional flexibility of design that long finger-jointed lengths will provide.

It must be emphasized, however, that this market cannot be supplied with just 2 x 4 and 2 x 6. Wider widths such as 2 x 8 and 2 x 12 are essential. It is doubtful whether the Alberta resource would be suitable for these wider widths.

Finger-jointed studs, though not yet accepted in the markets visited, have a growing market in areas such as Texas, and Arizona. The industrialized builders have appreciated the advantages of greater stability and now have confidence in the structural integrity of the joints. Prices for finger-jointed S-P-F studs maintained a substantial margin over solid wood studs even in the recent poor market conditions. This margin was in excess of $25 per thousand, at times, for a well produced stud that had been dressed after finger-jointing.

Previous studies have indicated that the market for finger-jointed studs is likely to grow. There would therefore appear to be an opportunity to increase the value of low grade dimension lumber in Alberta. It should be noted however that this information is dated and is not based on the market research undertaken for this study and would need confirmation. The market areas visited on this occasion do not yet accept finger-jointed studs.

OTHER PRODUCTS

As in the case of Toronto some further products other than commodity lumber were investigated.

MSR Lumber

Discussions with wholesalers and distributors indicated that demand for MSR lumber, particularly in Minneapolis/St. Pauls continues to grow. This market holds an excellent potential for Alberta sawmills.

Fencing

The fencing market at the retail level is particularly strong at this time of the year. Furthermore there appears to be an increase in the use of fencing. Most companies visited indicated that they were having difficulty obtaining supply. This is, basically, due to the poor markets for commodity lumber. Fencing is usually remanufactured from shorts. Consequently, if mills are producing below capacity, then they develop less low value material suitable for remanufacture into fencing; hence shortages can develop.

Though the fencing market in the mid-west certainly offers an opportunity for secondary manufacture in Alberta the economics of such an operation would need careful evaluation. It is probable that the returns would be better than those that could be obtained from the Toronto market. Sutherlands in Kansas City indicated that Chandler in Idaho supplies fencing to a number of the Sutherlands outlets in the south and west of the U.S. Much of the raw material used by Chandler comes from B.C. and Alberta. It would therefore appear that an opportunity could well exist for Alberta.

Sidings

Unfortunately, spruce siding has a poor image in the market areas visited. The retail market for lumber siding is very small and the consensus was that contractors would not be interested in spruce. The majority of the exterior cladding being in hardboard, aluminum and vinyl. High quality homes sometimes demanded a lumber siding but in these cases the extra cost of cedar or redwood would be accepted. There does not, therefore, appear to be a potential "niche" for a siding based on the Alberta resource in the markets visited.

Home Centre Lumber

Furring strips and short lengths of boards represent a high margin steady volume business to the retail outlet. It was difficult to identify any precise figures for the actual volumes handled but it seemed generally agreed that it would be in the region of 15 percent of the lumber sold at the retail level. On this basis the U.S. retail trade would sell about $1 billion of these sizes annually. This is clearly a large market and is one that is not being supplied by Alberta mills.

The principal problem lies in distribution and marketing. Though the volumes in total are large the quantities of each size required at any one time by each outlet are small. A number of companies suggested that producers could profit from making a special effort on this type of business. The size of units should relate to the volumes any one outlet needs. Prices should be per piece not based on thousand board feet. If shipment can only be made by rail car then mixed cars containing some bundles of these sizes should be offered.

The costs of developing a program along these lines would need evaluation. There is little doubt, however, that the forest industry in Alberta and B.C. has done little to recognize the special needs of the retail DIY market. It is a speciality, not a commodity, business and requires a different marketing approach.

There are opportunities in this market sector for Alberta companies. Strictly speaking it would not be in secondary manufacturing but a development of innovative marketing at the primary manufacturing level.

It is worth noting that a number of companies in Quebec and Ontario have already developed a more flexible and specialized approach to home centre lumber needs.

TABLE 4.3

List of Contacts Made in the United States

Chicago
- Edward Hines Lumber Co. (25/60)
- Glenview Mfg. Co.
- Gee Lumber (13/33)
- Naked Furniture (Cushman Co. Inc.)
- K-Mart
- Unfinished Furniture Institute
- Aspen Sales Inc. (panelboard wholesaler)
- R. Kerwin (lumber wholesaler)
- Courtesy Home Centre (4/23)
- National Home Centre News
- Hardy Andy (11/55)
- Forest City Home Improvement (3/? - part of 21/110 group based Ohio)

St. Louis
- Great Central Lumber Co. (4/?)
- Hill Beham Lumber Co. (31/50)
- Georgia Pacific Corp.
- Central Hardware Co. (30/180)
- K-Mart
- B and B Home Supply/Eclipse Industries (8/22)
- Essen Hardware and Lumber (4/?)
- Ranch Lumber (2/?)

Kansas City
- Sutherland Lumber Co. (72/200)
- Daniels-McGray Lumber (4/18)
- Payless Cashways Inc. (99/500)
- Beverly Lumber Co. (4/6)
- Cash Bargain Lumber (1/4)

Minneapolis/St. Pauls and Vicinity
- Menard Cashway Lumber (15/127)
- Anderson Corporation
- Fullerton Lumber Co. (65/35)
- Winter Sales
- Great Plains Supply Co. (114/110)
- Knox Lumber Co. (9/75)
- Reserve Supply Co.
- Lampert Lumber Co. (49/68)
- Canton Corp.
- Plywood Minnesota (21/37)
- C-H Carpenter Lumber Co. (8/10)
- Gambles

Note: Bracketed figures indicate number of outlets/recent sales value in $ million.

4.5 WINDOW COMPONENTS

The largest window manufacturer in North America is Andersen Corporation. Detailed discussions were held with this company since it is generally regarded as being one of the leaders in window manufacture.

The company uses about 100 million board feet per year of lumber of which 50 percent is bought as lumber, for remanufacture by Andersen, and the balance is bought pre-cut to specified lengths. At present the great majority of all lumber used is ponderosa pine though a limited volume of Canadian white pine is now being purchased. Andersen's worked with a saw mill in Idaho to develop a suitable grade from lodgepole pine. The mill decided that the effort required to select the grade was too great and the programme was dropped.

Though a sound tight, knotted grade of lumber is not suitable in all cases, it appears that Andersen could purchase around 15 million board feet of cut stock in such a grade. There are three main specifications which are required. The detailed requirements are shown in Appendix B. The total annual volume for these is around 10 million board feet and price levels in May, 1983 were in the region of U.S.$700 per thousand board feet FOB saw mill.

There is little doubt that the Alberta resource can provide a considerable volume of material that would meet these specifications. Furthermore it could be cut from logs that are currently being sawn into dimension lumber at an FOB mill price of U.S.$200 to $230 per thousand board feet (May, 1983). There are, however, manufacturing and grading difficulties. The specifications demand full or over size

dimensions which would make it difficult to pull out suitable pieces from CLS dimension stock. Also, the moisture content required is a maximum of 11%.

These are not insuperable difficulties, but will certainly interrupt normal production and will have a cost. Detailed analysis will be required to determine whether, for any particular mill, this cost is greater or less than the additional $400 to $500 per thousand board feet that could be obtained. It is highly likely that the answer will vary radically from mill to mill.

It is important to note that the requirements being dicussed are only those of one company, albeit the largest. There are, therefore, many other window manufacturers who could be interested if it can be shown that lodgepole pine is an adequate substitute for ponderosa or eastern white pine.

The potential size of the market could, therefore, be well in excess of the Andersen volume.

4.6 EXPORT MARKETS OFFSHORE

The scope of the market study did not include any detailed assessment of the opportunities for export to offshore markets. The Alberta forest product industry has tended to believe that the transportation disadvantages, relative to B.C. mills, for shipping to the coast make it impractical to consider export. This disadvantage varies depending on the locations but the freight cost to the coast would be in the region of $30 per thousand board feet more for an Alberta mill than for a B.C. Interior mill.

A cost of this nature would represent a significant part of the value of regular dimension lumber. For higher value speciality products or sizes, it is, however, a considerably smaller proportion.

The European market for redwood in a joinery grade is very sizeable. Precise figures are not published but, on the basis of what is known of Scandinavian production, the volume of grades of better than construction quality softwood lumber being exported to the EEC is likely to be close to 1 billion board feet per year.

The nature of lodgepole pine in Alberta is not very different from the pine being cut in Scandinavia and sold as redwood. It should be noted that in Europe pine and spruce are separated. Pine is sold as "redwood" and commands about 20 percent higher prices than spruce, which is sold as "whitewood".

Many Swedish sawmills are able to obtain over 50 percent yield of the higher grades. Though it is not suggested that existing Alberta mills could obtain a similar recovery it is likely that a reasonable proportion of high value grade that could compete with the Scandinavian product should be possible.

The prices that have been applicable during the latter part of 1982 indicate that the return to an Alberta mill could have been close to double that being obtained for dimension lumber at that time. It must be emphasised, however, that this is not yet an established market. European buyers have yet to be convinced that Canadian lodgepole pine can be produced and graded properly. Most appear to believe that the species offers a reasonable substitute for Scandinavian redwood. They lack confidence, however, in North American producers on two particular counts:

- production standards and quality control.

- committment (past experience has shown that Canadian producers are fickle and will change from one market to another as prices alter).

These are valid concerns. North American production standards, including quality control, are inferior to those accepted in Europe. Furthermore the forest industry, in Canada in particular, has a commodity trading mentality which results in a short term selling approach as opposed to long term marketing.

Consequently, though a potential market certainly exists, it is not one that can be developed easily and rapidly. So far, there is only one company in the B.C. interior that has totally committed to developing this market. Others have experimented from time to time but, essentially, the results of their activity have only confirmed the buyers views that (a) lodgepole pine could be suitable and (b) that Canadians are unreliable.

Before an Alberta producer tries to develop this potentially profitable market it will be essential that the company management becomes fully aware of the effort and committment, and the costs of these, that will be necessary. A real understanding of consumers' needs and the trade and distribution structure involved is also necessary.

Inevitably the Alberta mill will always have a transportation disadvantage relative to the B.C. mill. Consequently, if a large number of B.C. mills converted to this type of production with the result that supply exceeded demand, the Alberta mill could be in a poor position. However, there is little sign at present that B.C. mills are likely to make such a move. Furthermore, the production economics of such an activity suggest that a large volume, high speed mill should concentrate on dimension lumber. Some of the smaller Alberta mills, with higher than average costs for dimension lumber production, could be in a quite different situation.

This is not the only potential market for solidwood export but, in the consultants' view, it is the one that offers the best opportunity, bearing in mind the transportation disadvantage. Other markets, such as North Africa and the Middle East, tend to be for construction grade material and would be less economically attractive.

Similarly the growth potential for S-P-F dimension lumber in Japan is not of any real interest to Alberta while there is a freight disadvantage relative to B.C. mills. Rather than absorb $30 per thousand freight cost it would be preferable to drop prices $10 in the North American market. This is a somewhat simplistic approach but, nevertheless, essentially valid.

SECTION 5.0

CONCLUSIONS

5.1 The Alberta secondary manufactured wood product industry is large and provides direct employment for about 5,500 Albertans. Annual sales values are in excess of $400 million with a large value added component.

5.2 The wood products used as raw material by most of the industry are not based on the Alberta forest resource.

5.3 The industry consumption of particleboard would provide a substantial market for an Alberta based plant.

5.4 The millwork industry is being particularly severely affected by the depressed economic conditions.

5.5 The relocatable structure industry has been very adversely affected by the reduction in petroleum development activity.

5.6 The following industry sectors appear to have expansion potential based on a comparison of domestic production and consumption:

- windows
- doors
- kitchen cabinets
- furniture

5.7 The following industries do not appear to have any significant potential for expansion due to the capacity of the companies that currently exists:

- millwork
- custom cabinets
- trusses

5.8 The manufactured home industry may have the potential for expansion once the economy recovers but there are constraints related to zoning, financing and the image of the product.

5.9 The following product lines have good market potential:

- unfinished pine furniture
- interior shutters
- laminated boards
- interior panelling
- MSR lumber
- lumber in home centre sizes

The economic feasibility of production of these items based on the Alberta forest resource requires examination.

5.10 The export market may have a good potential for selected grades and sizes. A detailed knowledge of users' requirements, distribution structures and trade practices is essential.

APPENDIX A

IMPORT DUTIES

IMPORT DUTIES ON WOOD PRODUCTS INTO CANADA

Duty on wood and wood products into Alberta from U.S.

1) Wood windows - 13.8% duty + 5% FST on duty paid in $C.

2) Kitchen cupboards - 17.5% + 5% FST from U.S.

3) Particleboard - 11% + 9% FST.

4) Raw wood of any species that has been planed but not sanded, profiled, and cut and is R/L with the same profile along its length, i.e. fir and finger jointed pine from Washington, oak from U.S. and mahogany - 0% duty.

   - end cutting or profiling would then put the commodity in a 12.1% duty + 5% FST.

IMPORT DUTIES INTO THE U.S. (1983)

Product	Tariff[1]
Furniture (whether assembled or not)	
- chairs	6.9%
- other than chairs	3.8%
Shutters	
- fixed louvres	16-2/3%
- moveable louvres	8%

Panelling or Siding		
-	profiled only in longitudial direction	free
-	end matched, stained or treated	2-1/2%
Fencing		
-	whether or not assembled	free

Source: U.S. Customs

1 Percentage of selling price excluding cost of transportation within the U.S.

APPENDIX B

ANDERSON SPECIFICATION

Andersen Corporation

MATERIAL SPECIFICATION SHEET

DRAWN BY: MK	REV: B	PAGE 1 OF 3	MAT. SPEC. NO. F36

SPECIFICATION DESCRIPTION:

Specific Requirements for Perma-Shield Narroline Sill - White & Terratone Cutstock

REVISIONS

ECN	LTR	DESCRIPTION	DATE	APPD
10484	A	Revised and Released	4/30/81	MK
10639	B	Revised per ECN	10/16/81	MK

PAGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	PART NUMBER
REV.	A	A	B																		

1. General Requirements: Specification F3. Grade 3.

2. Material Size:

   2.1 See #6 Diagram - this sheet.
   2.2 Stock shall be uniform width over whole length, no taper allowed.

3. Gluing:

   3.1 Fingerjointing, core blocking, and edge gluing shall be allowed as per #6 Diagram.
   3.2 Adhesive used shall be "Wet Use" as approved by specification B1.

4. Defects:

   4.1 Sound knots shall be allowed up to 2" in diameter in area A-B only, see #6 Diagram. Only sound knots up to 1/2" in diameter shall be allowed 4" from the ends.
   4.2 Other defects as per specification F3 - grade 3 shall be allowed.

5. Laying Instructions: Lay millable defects up and away from the guide.

6. Diagram:

   6.1 Length tolerance: +1/2", -0".
   6.2 Shaded areas indicate locations where glue lines shall not be allowed.
   6.3 RCS numbers, rough cut lengths and unit numbers shall be as follows:

UNIT NUMBER	ROUGH CUT LENGTH	TYPE	RCS NUMBER
1-8	3'- 11"	2 piece	870604640
2-0	4'- 6"	2 piece	870604646
2-4	5'- 2"	2 piece	870604652
2-8	5'- 10"	2 piece	870604659
3-0	6'- 6"	2 piece	870604668
3-4	7'- 2"	2 piece	870604674
3-8	3'- 11"	1 piece	870604640
Picture Window			
4-4	4'- 7"	1 piece	870604648
5-0	5'- 3"	1 piece	870604654
5-8	5'- 11"	1 piece	870604660
Scholz PW.			
6-4	6'- 7"	1 piece	870604667
8-4	8'--7"	1 piece	870604689

7. Moulder Clean-Up:

   7.1 Bed: 0" - 1-13/32" or 1/16" - 1-9/16"
   7.2 Guide: 1/16"

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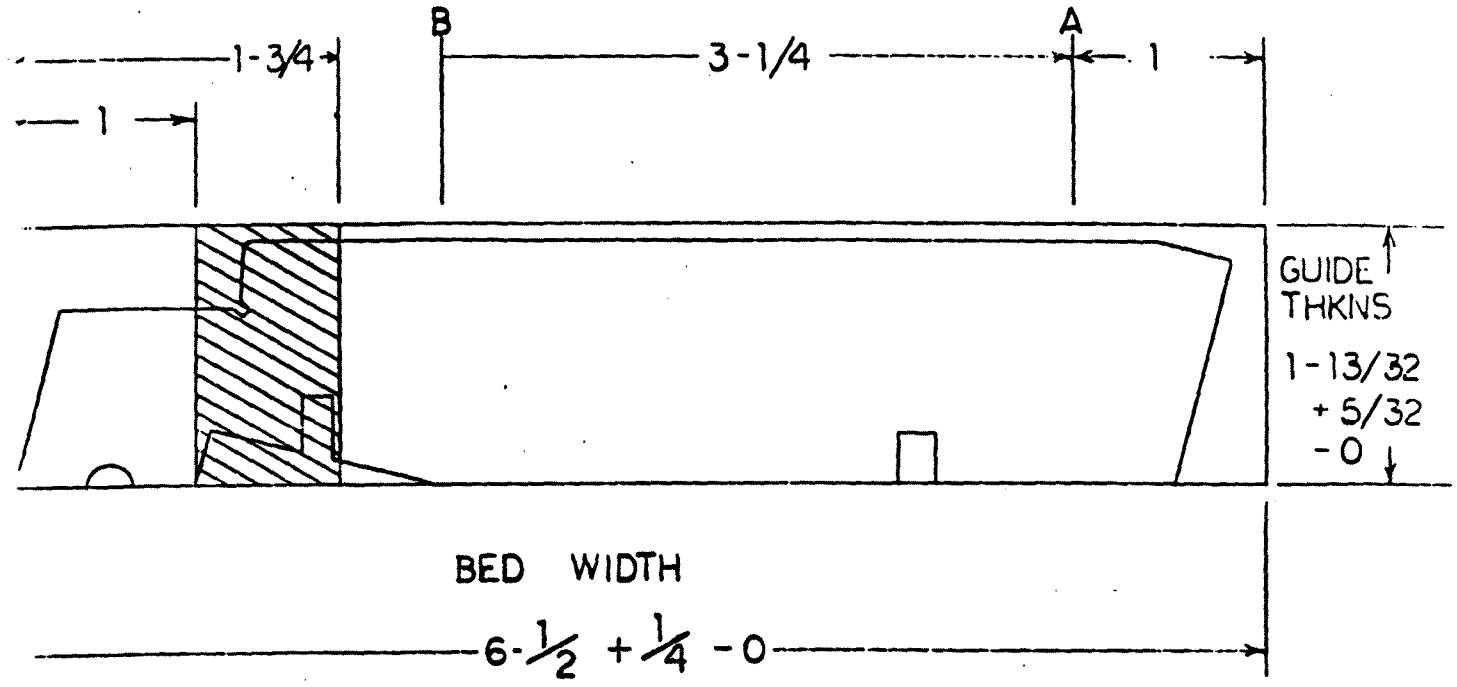
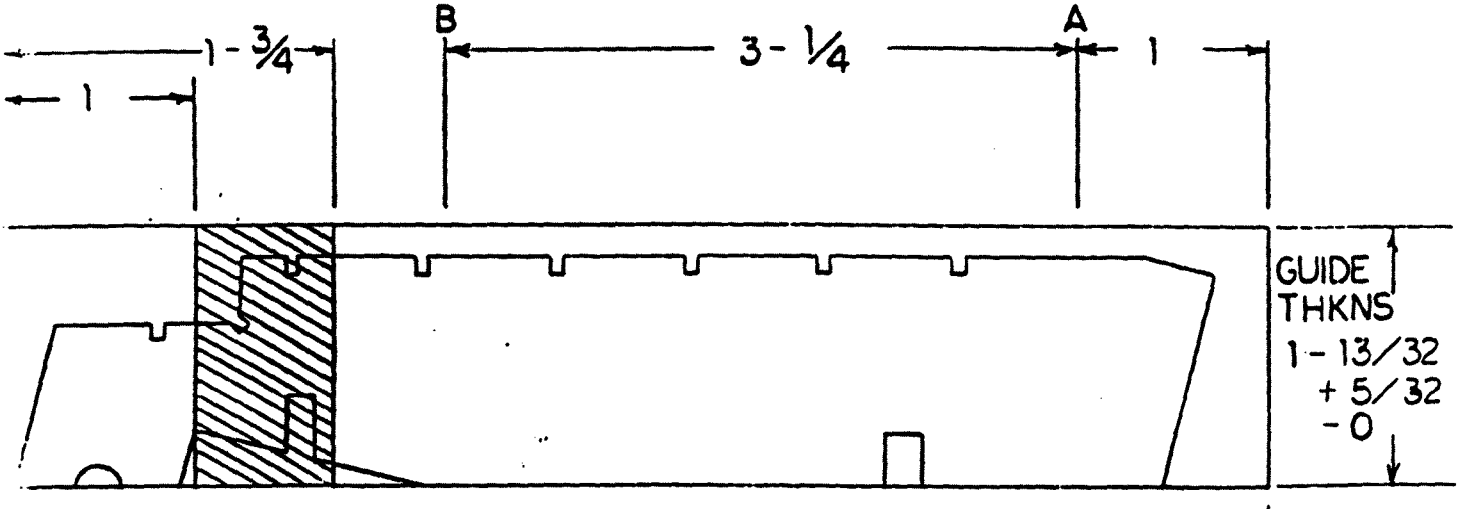
6. Diagram:



WHITE



TERRATONE

		MATERIAL SPECIFICATION SHEET	
AWN BY: MK	REV: B	PAGE 1 OF 2	MAT. SPEC. NO. F72

CIFICATION DESCRIPTION:

Specific Requirements for Perma-Shield Casement/Awning Casement Head & Sill - Awning Side Jamb Cutstock

REVISIONS

CN	LTR	DESCRIPTION	DATE	APPD
00484	A	Revised & Released	4/30/81	MJK
00823	B	Revised per ECN	5/21/82	MJK

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	PART NUMBER
	B	B																			

Cont. Head & Sill - Awning Side Jamb Cutstock	B	172	2

1. General Requirements: Specification F3 - Grade 3.

2. Material Size:

   2.1 See #6 Diagram - this sheet.
   2.2 Stock shall be uniform width over whole length, no taper allowed.

3. Gluing:

   3.1 Fingerjointing and edge gluing shall be allowed.
   3.2 Adhesive used shall be "Wet Use" as approved by specification B1.

4. Defects:

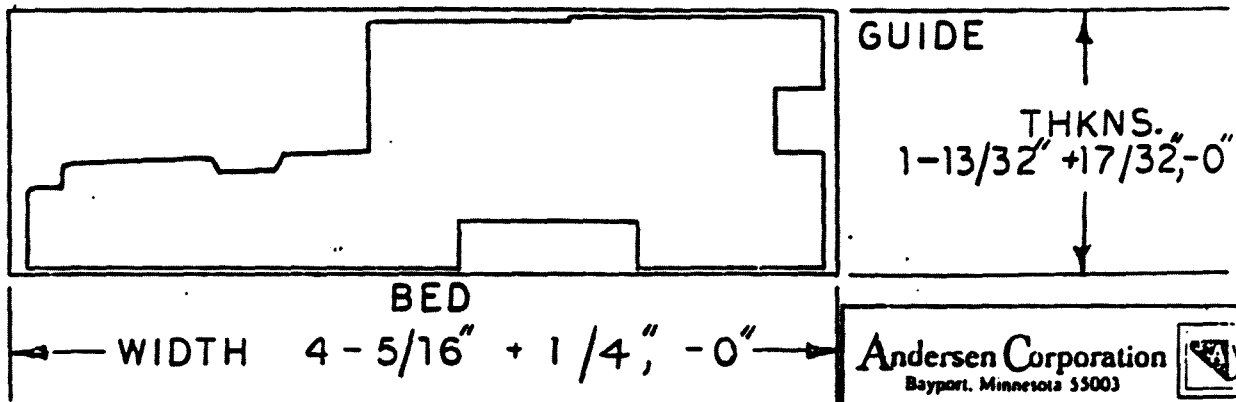
   4.1 Sound knots shall be allowed up to 1 ¼" in diameter, except within 3" of cutstock ends.
   4.2 Other defects as per specification F3-Grade 3 shall be allowed.

5. Laying Instructions: Lay millable defects up and away from the guide.

6. Diagram:

   6.1 Length tolerance: +1", -0".
   6.2 Shaded areas indicate locations where glue lines shall not be allowed.
   6.3 RCS numbers, unit numbers and rough cut lengths shall be as follows:

UNIT NO.	ROUGH CUT LENGTH	RCS NUMBER
CR1	1'- 5"	800618813
CN1/AN1	1'- 9"	800618819
C1/A1	2'- 0"	800618820
CX1	2'- 5"	800618824
C30/A30	3'- 0"	800618830
CN2/AX1	3'- 5"	800618835
C2/A2	4'- 0"	800618840
CX2	4'- 9"	800618848
C3/A3	6'- 0"	800618860



7. Moulder Clean-Up:

   7.1 Bed - 0"
   7.2 Guide - 1/16"

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Andersen Corporation	MATERIAL SPECIFICATION SHEET		
AWN BY: MK	REV: B	PAGE 1 OF 2	MAT. SPEC. NO. F35

ECIFICATION DESCRIPTION:

Specific Requirements for Perma-Shield Narroline Side Jamb Cutstock

REVISIONS

ECN	LTR	DESCRIPTION	DATE	APPD
0484	A	Revised & Released	4/30/81	MK
0753	B	Revised per ECN	2/11/82	MK

E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	PART NUMBER
V	B	B																			

TITLE	REV.	MAT. SPEC. NO.	PAGE
Specific Requirements for Perma-Shield Narroline Side Jamb Cutstock	B	F35	2

1. General Requirements: Specification F3. Grade 3.

2. Material Size:

   2.1 See #6 Diagram: this sheet.
   2.2 Stock shall be uniform width over whole length, no taper allowed.

3. Gluing:

   3.1 Fingerjointing and edge gluing shall be allowed as per #6 Diagram.
   3.2 Adhesive used shall be "Wet Use" as approved by Specification B1.
   3.3 Stress testing as per Specification F24 shall be required on all side jambs, Unit # 4-6 or longer containing fingerjointing.

4. Defects:

   4.1 Sound knots shall be allowed up to 1/2" in diameter.
   4.2 Other defects as per Specification F3 - Grade 3 shall be allowed.
   4.3 No cup allowed.

5. Laying Instructions: Lay millable defects up.

6. Diagram:

   6.1 Length tolerance: +1", -0".
   6.2 Shaded areas indicate locations where glue lines shall not be allowed.
   6.3 RCS numbers, unit numbers and rough cut lengths shall be allowed as follows:

UNIT NUMBER	ROUGH CUT LENGTHS	RCS NUMBER
2-10	3'- 1"	870405431
3-2	3'- 5"	870405435
3-10	4'- 1"	870405441
4-2	4'- 5"	870405445
4-6	4'- 9"	870405448
5-2	5'- 5"	870405455
5-6	5'- 9"	870405458
6-2	6'- 5"	870405465
6-6	6'- 9"	870405469

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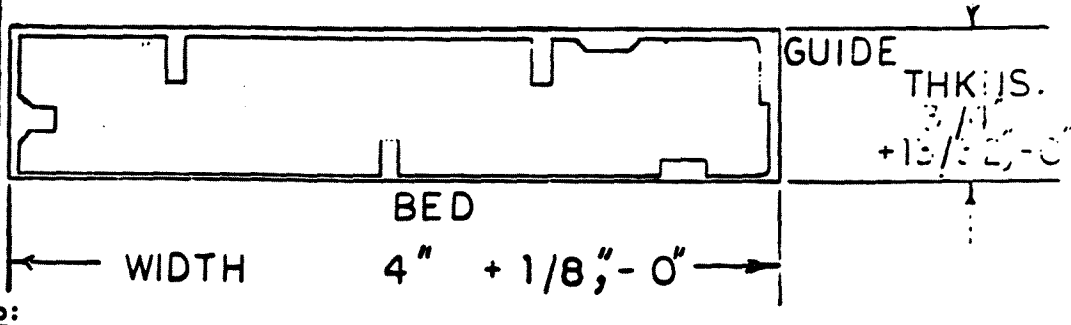

7. Molder Clean-Up:

   7.1 Bed - concave
   7.2 Guide - 1/16"

WN BY: MK	REV: F	PAGE 1 OF 4	MAT. SPEC. NO. F3

CIFICATION DESCRIPTION:

General Requirements for Cutstock Grade 3

REVISIONS

CN	LTR	DESCRIPTION	DATE	APPD
484	A	Revised & Released	4/30/81	MJK.
555	B	Revised per ECN.	7/13/81	MJK.
639	C	Revised per ECN	10/14/81	MJK.
0887	D	Revised per ECN	7/ 2/82	BA
1028	E	Revised per ECN	11/23/82	BA

GE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	PART NUMBER
V.	E	E	E	D																	

R.G. 42A

1. Seasoning:

1.1 All cutstock shall be kiln dried.
1.2 After drying, no piece shall have a moisture content greater than 11 %.
1.3 All stock shall be free of seasoning stresses.

2. Straightness:

2.1 LENGTH	EDGE BOW	FACE BOW
0" - 48"	1/32" maximum	1/32" maximum
49" - 65"	1/16" maximum	1/16" maximum
66" - 79"	3/32" maximum	3/32" maximum
80" and longer	1/8" maximum	1/8" maximum

2.2 Cup: 1/32" maximum, unless otherwise stated as per individual part spec.

3. Defects: Shall be classified "No sides exposed", "Core", "Perma-Shield Covered", etc.

3.1 Material Imperfection:

3.1.1 One or more 1/32" wide checks, no closer than 3" to the end of the piece. The combined length of multiple checks shall not exceed 3", pieces up to 4" wide, and 0", pieces over 4" wide. No through checks allowed.

3.1.2 One or more dry pitch pockets, 1/8" wide and the combined length not exceeding 4".

3.1.3 One or more light pitch streaks 1/12 of the width and the combined length not exceeding 1/6 of the length.

3.1.4 Grain Orientation on all sides shall not exceed 1" in 5", unless otherwise specified as per individual part specification.

3.1.5 Sound Knots shall be allowed up to 1" in diameter, unless otherwise specified as per individual part specification within 3" of end.

3.1.6 Bark and/or Wane shall be allowed only when in area to be milled away during profiling.

3.1.7 Decay, Rot, and Unsound Wood shall not be allowed.

3.1.8 Stain:

3.1.8.1 Stain: 100% light brown and blue stain allowed, four sides of surface area. Medium and dark stain is not allowed.

3.1.8.2 Stain Classification:

3.1.8.2.1 Light Stain: Sapwood that is so slightly discolored that it does not materially affect natural finishes.

3.1.8.2.2 Medium Stain: Sapwood has a pronounced difference in coloring, which sometimes affects its usefulness for natural finishes, but not for paint finishes.

3.1.8.2.3 Heavy Stain: Sapwood has so pronounced differences in color that the grain may be obscured.

3.1.9 Slinker Stock: None shall be allowed.

3.1.10 Fixed Knots: Shall be allowed up to 1/4" in diameter. A fixed knot will retain it's place in dry lumber under ordinary conditions, but can be moved under pressure though not easily pushed out ALLOWED WITHIN 3" OF END.

3. Defects (cont.)

3.2 Manufacturing Imperfections:
- 3.2.1 Medium torn grain shall be allowed not exceeding 1/16" deep.
- 3.2.2 Light raised and loosened grain shall be allowed not exceeding 1/32" deep.
- 3.2.3 Very light machine bit, gouge, and offset shall be allowed not exceeding 1/64" deep.
- 3.2.4 Light chip marks shall be allowed not exceeding 1/32" deep, if scattered or medium chip marks not exceeding 1/16" deep, one per piece.
- 3.2.5 Slight knive marks readily visible, but no unevenness to touch.
- 3.2.6 Very slight mismatch not exceeding 1/64" shall be allowed.

3.3 Gluing Instructions:
- 3.3.1 Voids shall be allowed as follows:
  - 3.3.1.1 Depth not exceeding 1/16".
  - 3.3.1.2 Length or width such that one dimension not exceeding 2" and the other not exceeding 1/8".
- 3.3.2 Set Back or Uneven Ends shall be allowed not exceeding 1/4" when laminating.
- 3.3.3 Offset shall be allowed as follows:
  - 3.3.3.1 Fingerjointing shall not exceed 1/16".
  - 3.3.3.2 Laminating shall not exceed 1/16".
- 3.3.4 Squeeze Out shall be allowed up to a volume such that glued loads contain no blocking.
- 3.3.5 Starved Joints shall not be allowed. Adhesive shall bond over entire area to be glued.
- 3.3.6 Open Ends shall not be allowed.

3.4 Millable Defects: Defects which mill out as per individual part diagram shall be allowed, provided finished part is clean.

4. Gluing:

4.1 See individual part specification.

4.2 No edge gluing or laminating shall be allowed on finished profile within 1/8" of any side, exposed shoulder, groove or saw kerf.

5. Dimensional Variations: Specific requirements indicate a range of cutstock sizes from which specific parts can be milled. These tolerances in many cases exceed machine capabilities after initial set-up. Therefore, dimensional variations (smallest to largest) within a cutstock load shall be as follows:

5.1 Frame Components:
- 5.1.1 Thickness - 1/16" maximum.
- 5.1.2 Width - 1/16" maximum.
- 5.1.3 Length - 1" maximum.

5.2 Sash Components:
- 5.2.1 Thickness - 1/16" maximum.
- 5.2.2 Width - 3/64" maximum.
- 5.2.3 Length - 1" maximum.

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6. Species: See Specification F22-Species requirements.

7. Special Notes:

   7.1 Specific part requirements have overriding authority.

8. Weight Standards and Calculations: See F1 - 8.