Price
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GOVERNMENT OF CANADA

DEPARTMENT OF REGIONAL ECONOMIC EXPANSION

THE MARKET FOR PLATE AND HOT ROLLED SHEET STEELS

MARCH, 1974

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March 14, 1974

Mr. A.G. MacLennan,
Industrial Development Branch,
Department of Regional Economic Expansion,
161 Laurier Avenue West,
Ottawa, Ontario.
K1A OM4

Dear Mr. MacLennan:

We attach our report "The Market for Plate and Hot Rolled Sheet Steels". This study has been completed in accordance with our proposal dated October 26, 1973 and discussions with Mr. Hore.

Yours very truly,

PRICE WATERHOUSE ASSOCIATES

J.E. Konrad

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1. Background

On November 13, 1973, the Industrial Development Branch of the Department of Regional Economic Expansion authorized a study to assess the market for plate and hot rolled sheet steel in Western Canada. The purpose of the study was to establish the magnitude of markets for Saskatchewan-produced flat rolled products which would complement the present pipe operations of Interprovincial Steel and Pipe Corporation Ltd. in Regina. Pipe was specifically excluded from the study. The terms of reference included hot rolled sheet and plate up to and including 3/8 inch in thickness. Indications as to the proportion consumed in standard mill finish, as opposed to pickled and oiled, was to be given for each product.

The market was to be analyzed geographically, that is, by provinces in Western Canada, and by states in a selected region of the northwestern United States. Market data was to be given in tonnage by gauges and widths; prices by product and local market. Present sources of supply were to be identified. An analysis was to be made of past growth in these products and a projection made of future growth. Future markets were to consider the present economic climate in Canada and the effects of foreign competition.

2. Market Highlights

2.1 Plate Steel

. During 1973, IPSCO's primary market region consumed about 364,000 tons of plate steel. This region comprised British Columbia, the Prairies, North Dakota and Montana.

- Approximately 190,000 tons or 52% were within IPSCO's maximum light plate gauge limitation of 3/8 inch.
- Approximately 130,000 tons or 35% were within IPSCO's maximum light plate width limitation of 60 inches.
- Approximately 340,000 tons or 93% were used with the standard black mill surface.
- The demand for plate steel is expected to increase from 6% to 8% per year over the next five years.

2.2 Hot Rolled Sheet and Strip Steel

- During 1973, IPSCO's primary market region consumed about 141,000 tons of H.R. sheet and strip steel. This region comprised British Columbia and the Prairies.
- Approximately 125,000 tons or 89% were within IPSCO's maximum sheet and strip width limitation of 60 inches.
- Approximately 40,000 tons or 28% were used in the pickled and oiled condition.
- The demand for H.R. sheet and strip steel is expected to increase from 8% to 10% per year over the next five years.

3. Approach

We began the study with a visit to the offices and plant of Interprovincial Steel and Pipe Corporation to establish the range of products to be covered in this study. In particular, it was necessary to recognize gauges and widths for the purpose of classifying the products.

Statistics Canada and industry sources were researched to provide a basis of estimating historical growth, regional markets and industry trends. A listing of major steel users by standard industrial classification was procured from Statistics Canada. This information was used later in our questionnaire and interview survey.

A questionnaire was designed and issued to prime users of the selected steel products. The survey was to provide a rough guide as to the kind of steel products used, quantities consumed, and future needs. On the basis of these questionnaires, we were able to identify a relatively short list of users who account for the major share of steel consumption.

Another questionnaire was designed and issued to steel service centres in Western Canada. This survey provided a relatively good measure of volume handled in each product classification. The main purpose of this questionnaire was to provide a basis for later interviews.

With a substantial amount of background data available, an interview program was pursued throughout Western Canada among steel service centres, distributors, and major users. These interviews were the main source of our estimates of current demand, prevailing prices and trends for each of the product groups.

Representatives of each of the provincial Departments of Industry in the western provinces were interviewed to identify recent studies undertaken with respect to demand for steel, and any other information that might support our inquiries.

A parallel interview program among steel service centres, distributors, and major users was undertaken to assess current demand, prices and trends in Minnesota, North Dakota, South Dakota, Montana and Wyoming. Since these particular states do not correspond to any defined U.S. region, we have referred to these states as "the U.S. Upper Midwest" or for brevity "Selected States".

Research was undertaken in Western Canada and the U.S. Upper Midwest with respect to freight rates and tariffs affecting demand for these steel products.

The statistical, questionnaire and interview data was analyzed and correlated to provide a profile of current and future demands for the selected steel products. On the basis of limited discussions with several steel producers knowledgeable with the western market, we were able to confirm the essential conclusions of this study.

4. Product Description

Plate and hot rolled sheet and strip are flat rolled steel products produced by a hot rolling mill. These three steel commodities are defined on the basis of their thickness and width as illustrated in Exhibit I, "Industry Product Classification". Generally, strip is relatively heavy gauge and narrow, while plate is heavy and wide. As can be seen from the exhibit, strip is never over 12" wide while sheet is always more than 12". Plate and sheet are classified on the basis of width and gauge combinations.

IPSCO's hot rolling facilities consist of a 2-Hi reversing slab and plate mill and a 4-Hi reversing hot strip mill. The 2-Hi reversing mill processes ingots into heavy wide plate or into a slab for further thickness reduction on the 4-Hi reversing hot strip mill. The 2-Hi reversing mill can produce plate over ½" thick and up to 72" wide. The 4-Hi reversing hot strip mill is used to produce light plate, up to 3/8" thickness and 60" width, or hot rolled sheet and strip material down to a minimum thickness of 16 gauge and up to 60" width.

Since plate and H.R. sheet and strip is produced while the steel is red hot, a black oxide forms on its surfaces during cooling. These products may be sold with or without this black mill surface finish. This black oxide may be removed by a pickling operation that gives the steel a cleaner surface which is then suitable for painting. The pickling operation consists of dipping the steel into warm acid to dissolve the oxide and then coating the steel with a light film of oil to prevent rusting during storage and transportation.

5. Consumption by Geographic Regions

5.1 All Geographic Regions

A summary of steel consumption in the major geographic regions covered by this study is shown in Exhibit II, "Steel Consumption for the Total Market". Approximately 495,000 tons of plate and 273,000 tons of hot rolled sheet and strip steel were consumed in all regions during 1973. Western Canada account for almost 75% of plate consumption, but only 53% of H.R. sheet and strip.

An analysis of Western Canadian consumption by region is shown in Exhibit III, "Total Steel Consumption in Western Canada". The most important plate and H.R. sheet and strip consuming provinces in Canada are British Columbia, Alberta and Manitoba. These three provinces account for 93% of Western Canada's plate consumption and 87% of H.R. sheet and strip.

A similar analysis of U.S. consumption is shown in Exhibit IV, "Total Steel Consumption in Selected States". Minnesota is by far the most important steel consuming state in the U.S. Upper Midwest and accounts for approximately 88% of plate consumption and 93% of H.R. sheet and strip.

5.2 Canadian Geographic Regions

A more detailed analysis of plate consumption by gauge, width and surface condition is presented in Exhibit V, "Steel Plate Consumption". Generally, Western Canada consumes more heavy wide plate than it does light narrow plate. Slightly more than half of the plate consumed falls within IPSCO's light plate gauge limitation of 3/8" while only 1/3 is within IPSCO's width limitation of 60". More than 93% of the plate is in the black finish. By comparison the U.S. market consumes a higher proportion of narrower and lighter gauge plate steel.

A similar analysis for H.R. sheet and strip steel is shown in Exhibit VI, "Hot Rolled Sheet and Strip Consumption". More than 88% of the H.R. sheet and strip consumption is within IPSCO's width limitation of 60". Furthermore, almost 30% of this steel was sold in the pickled and oiled finish. Although a similar proportion of U.S. consumption was within IPSCO's width limitation, about 75% was sold in the pickled and oiled condition.

5.3 Primary Market Regions

We have defined "primary market regions" as those areas offering IPSCO the greatest potential to increase current market share or to penetrate new markets. The basis for determining these regions is the lowest laid down price in a particular region. In determining these prices we have considered the following factors:

- Steel commodity prices F.O.B. mill as shown in Exhibit VII, "Comparison of Current Canadian and U.S. Steel Prices".
- Canadian freight rates as shown in Exhibit VIII, "Freight Rates to Canadian Destinations".
- American freight rates as shown in Exhibit IX, "Freight Rates to U.S. Destinations".
- Rates of duty in Exhibit X, "Import Tariffs on Steel Products Entering the United States".

An analysis of laid down prices in one major manufacturing city in each geographic region is presented in Exhibit XI, "Laid Down Price of Plate and H.R. Sheet and Strip". This analysis indicates that IPSCO's primary market region comprises British Columbia and the Prairies for plate and H.R. sheet and strip, and also North Dakota and Montana for plate steel only.

On the basis of this analysis we have estimated the following market for plate steel:

- During 1973, IPSCO's primary market regions consumed about 364,000 tons of plate.
- Approximately 190,000 tons or 52% was within IPSCO's maximum light gauge plate limitation of 3/8".
- Approximately 130,000 tons or 35% was within IPSCO's maximum light plate width limitation of 60".
- Approximately 340,000 tons or 93% was consumed with the standard black mill surface.

Similarly we have estimated the following market for H.R. sheet and strip steel:

- During 1973, IPSCO's primary market regions consumed about 141,000 tons of H.R. sheet and strip.
- Approximately 125,000 tons or 89% were within IPSCO's maximum sheet and strip width limitation of 60".
- Approximately 40,000 tons or 28% were used in the pickled and oiled finish.

6. Trends Influencing Price Competitiveness

6.1 Steel Commodity Prices

In Canada, Stelco is the acknowledged industry price leader. Under normal market conditions, other mills adjust their prices to be competitive with Stelco on a regional basis. For example, to be competitive with a customer east of the Hamilton region, Algoma would quote F.O.B. Sault Ste. Marie but would absorb freight to Hamilton. Correspondingly, to be competitive with a customer west of Sault Ste. Marie, Stelco and Dofasco would quote F.O.B. Hamilton but would absorb freight to Sault Ste. Marie. In either case, Stelco's F.O.B. price is generally used as the base.

However, since IPSCO is so much further west, its F.O.B. price could be greater than Stelco's F.O.B. price by the difference in freight rates to Winnipeg. This assumes that IPSCO does not attempt to compete in markets east of Winnipeg. Therefore, IPSCO's competitive position will not change as domestic producers change their steel prices. This pricing strategy is employed to maintain market share but does not necessarily assure satisfactory profit margins.

IPSCO's competitive position in the U.S. Upper Midwest depends directly on the relative movement of Canadian and U.S. F.O.B. mill prices and changes in the exchange rate between Canadian and U.S. dollars. The U.S. mill prices shown in Exhibit VII, "Comparison of Current Canadian and U.S. Steel Prices" will probably increase significantly after April 1, 1974. On this date wage and price controls will end with the introduction of Nixon's Phase V program. This will tend to improve IPSCO's price competitiveness in U.S. Upper Midwest.

Since IPSCO must convert its U.S. dollar sales into Canadian funds, the exchange rate between the two dollars will play a role in IPSCO's price competitiveness in U.S. regions. As shown in Exhibit XII, "Foreign Exchange Rates", the U.S. dollar has been devalued relative to the Canadian dollar by over 9%. Such devaluation tends to make Canadian goods more expensive in U.S. markets.

Because the U.S. is such an important market for Canadian goods, we expect that the Canadian government will resist further increases in the Canadian dollar. The net result of anticipated U.S. price increases and further changes in exchange rates should improve IPSCO's competitive position in the U.S. Upper Midwest.

6.2 Transportation Rates

Recently the railways have announced sharp freight rate increases for steel shipments from Hamilton to Vancouver. It is unlikely that Regina - Vancouver rates will be increased proportionately. Since IPSCO ships steel to Vancouver via rail, its price position will be strengthened relative to eastern based steel mills. Because of recent commitments made to western provinces by Ottawa, it seems likely that railway rates will be held down and politically administered by the federal government.

However, as can be seen from Exhibit VIII, "Freight Rates to Canadian Destinations", IPSCO uses trucks to ship steel to all other Canadian destinations. We anticipate that truck rates will rise because of fuel price increases. Unless trucking rates are subsidized, IPSCO's competitive position would deteriorate in Western Canada. However, IPSCO should always maintain a transportation cost advantage.

A relative increase in truck rates compared to rail rates would have a more serious effect on IPSCO's competitiveness in the U.S. Upper Midwest. As shown in Exhibit IX, "Freight Rates to U.S. Destinations", IPSCO's truck rates are already significantly higher than rail rates from various U.S. steel mills. Such relative increases in truck rates may more than outweigh any advantage from higher U.S. steel prices expected after April 1, 1974.

6.3 Duty Rates

The objective of the current round of GATT talks (General Agreement on Tariffs and Trade) is to encourage free trade by the reduction of tariffs and other trade barriers. However, we do not anticipate any reduction in steel duty rates into the U.S. before 1975, or significant reductions until at least 1980.

7. Steel Imports

7.1 Western Canada

A summary of imports is shown in Exhibit XIII, "Steel Imported Through British Columbia Ports". During 1973 about 75% of the imported plate was over 60" wide, whereas only 20% of the H.R. sheet and strip was over 51" wide. Because these figures include steel used in the manufacture of pipes and tubes, we cannot accurately determine what proportion of total Canadian western consumption was imported during 1973.

However, the historical importance of imported steel in the Western Canada markets is illustrated in Exhibit XIV, "Apparent Consumption of Flat Rolled Steel Products in Western Canada". This exhibit indicates that in 1972, more than 28% of all plate and more than 50% of all sheet and strip consumed in Western Canada was imported. However 1972 was the high water mark for imported steel in Canada as illustrated by Exhibit XV, "Apparent Consumption of Flat Rolled Steel Products in Canada". A comparison of the data in Exhibit XIV and XV clearly shows that Western Canada has relied much more heavily on imported steel than Canada as a whole.

As of January 1974 imported plate was being laid down in Vancouver at prices 30% to 35% higher than domestic steel, and imported C.R. at 10% to 15% higher. Major imports are from Japan, Germany and Great Britain. It is estimated that Japan accounts for more than 90% of the total.

This represents a complete reversal of the competitive situation prevalent from the late 1960's to the beginning of 1973. From the mid-sixties to the end of 1971, the steel industry in most western countries had excess production capacity. Many countries, Japan and Germany in particular, were selling in international markets at distress prices. Imported steel was selling in Western Canada at prices 25% to 35% lower than steel from domestic sources. Exhibit XIV, "Apparent Consumption of Flat Rolled Steel Products in Western Canada", illustrates the steady increase in the proportion of

imported steel consumed in Western Canada from 1968 to 1972. During 1972 imports reached a peak and remained constant in the west during 1973. In Eastern Canada imports fell sharply during 1973. Domestic steel supplies became very tight during 1973 and western consumers, who had imported most of their requirements during the last few years, did not qualify for sufficient allocations from domestic producers. Western consumers were therefore forced to continue the import of a large proportion of their requirements at premium prices.

Imported steel prices moved from a discount of 25% to 35% to a premium of 10% to 35% within two years. This occurred because of a world-wide surge in steel demand concurrent with a reduced rate of increase in Japanese production capacity. This led to the current world-wide shortage of steel production capacity. Also, major currency realignments forced up the price of imports to Canadian consumers. These changes in foreign exchange rates are illustrated in Exhibit XII, "Foreign Exchange Rates". The sharp increase in the value of the Japanese yen and German mark made steel imports from these countries more expensive in Canada.

7.2 U.S. Upper Midwest

A summary of steel imports into these regions is shown in Exhibit XVI, "Imports of Steel Via North Dakota and Minnesota". Imported steel accounted for a much smaller proportion of total consumption in these regions; less than 2% for plate and about 10% for hot rolled sheet and strip. Furthermore, about 75% of all steel imported via these regions came from Canada, specifically from Ontario mills.

Algoma is quite active in the Minneapolis market. As can be seen from Exhibit XI, "Laid Down Price Comparison of Plate and H.R. Sheet and Strip", Algoma's prices are more competitive than IPSCO's or Chicago based mills. Even if U.S. steel prices were to increase significantly after April 1, 1974, Algoma would have a definite price advantage over IPSCO in the Minnesota market. This is by far the most important steel consumption region in the U.S. Upper Midwest.

8. Growth Potential

Historical growth rates for steel consumption in Western Canada are shown in Exhibit XIV, "Apparent Consumption of Flat Rolled Steel Products in Western Canada". A more detailed analysis of commodity growth rates for all of Canada is shown in Exhibit XV, "Apparent Consumption of Flat Rolled Steel Products in Canada". Although these figures include steel used in the manufacture of pipes and tubes, they still provide some insight into recent trends. The annual growth in demand for steel plate in Western Canada since 1968 has been 6.4%, slightly above the national trend of 5.5%.

Similar data on sheet and strip indicates that Western Canada growth of 10.4% since 1968 has been lower than the national average of about 12% to 13%. However, the national average over the last ten years has been only about 7½%. Considering that Canada's long term economic growth potential is only 5.5% it seems unlikely that such high steel consumption growth rates can be sustained indefinitely.

In Western Canada the most important steel consumers are in the metal fabricating industries as shown in Exhibit XVII, "Industrial Consumption of Plate and H.R. Sheet and Strip". In British Columbia transportation equipment industries are the second most important consumer, while in the prairie provinces, machinery industries are in second place.

Over the next two to four years, we anticipate the demand for metal resources, lumber, oil and gas, and agricultural products to remain fairly strong. Consequently, demand for plate should increase at 6% to 8% per year and H.R. sheet and strip at about 8% to 10% over the next five years.

9. Competitive Sources of Steel Products

9.1 Imported Steel

The two major factors that determine the prices of steel imports are the balance between world steel supply and demand, and changes in foreign exchange rates, particularly the Canadian dollar versus the Japanese yen.

Today there is a world-wide shortage of steel production capacity. In spite of the energy crisis and escalating prices of crude oil, the economies of developed countries are expected to expand during the next five years. This will support the current strong demand for steel products. Several other basic commodities are in short supply due to plant capacity limitations. Supply of these commodities can only be increased by heavy capital investment in new production facilities which in turn will consume large amounts of steel.

On the steel supply side, Japan has recently reduced its annual increase in steel production capacity from 15% per year to a longer term target of 5% per year. Furthermore, it seems likely that substantial increases in world steel production capacity will not occur before 1978. This high demand - tight supply situation should persist for at least three to four years maintaining the price of foreign made steel at a high level.

Significant adjustments in exchange rates can dramatically alter prices of imported steel in Western Canada. At this time it is very difficult to project with any confidence the direction or magnitude of exchange rates adjustments during the next five years. Assuming that there will be no drastic realignment of current exchange rates we expect that prices of imported steel will remain as high or higher than domestic prices during the next five years.

9.2 Domestic Steel

The major Canadian suppliers of plate and H.R. sheet and strip are Stelco, Dofasco and Algoma. A summary of their steel ingot production during the past ten years is shown in Exhibit XVIII, "Canadian Steel Ingot

Production". These three producers account for almost 80% of Canadian steel output. Stelco supplies virtually all types of steel products. Algoma specializes in structural steel shapes, heavy wide plate and uncoated flat rolled sheet and strip products. Dofasco's Hamilton operations produce only flat rolled steel products such as light plate, coated and uncoated sheet and strip products. More recently Dofasco has entered the tubular products market through their acquisition of Prudential Steel in Edmonton and their participation in Portable Pipe Mills Limited in Edmonton.

The steel ingot production of the three major producers has grown at 6.1% since 1968, somewhat above the 5.1% ten year trend line for total Canadian production. As shown in Exhibit XIX, "Projection of Steel Production Capacities in Ontario", the announced increase in steel production capacities for the three major producers averages only 5.8% per year to 1978. Should a major steel consuming project, such as the MacKenzie Valley Pipeline, be initiated during this five year period, it is unlikely that domestic steel production will be sufficient to meet total demand.

* * * * *

The information presented in this report is based on careful research and is believed to be reliable and current as of March 6, 1974. Estimates and projections are subject to many variables which could quickly render specific conclusions invalid. In interpreting this report attention should be given to the underlying assumptions.

PRICE WATERHOUSE ASSOCIATES

OTTAWA, March, 1974

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INDUSTRY PRODUCT CLASSIFICATION

BY GAUGE AND WIDTH

FLAT ROLLED STEEL COMMODITY TERM	THICKNESS LIMITS FOR A GIVEN WIDTH RANGE			
	8" or less	over 8" to 12"	over 12" to 48"	over 48"
Bar	Over 0.2030" 13/64" and over Heavier than #5 gauge			
Plate		Over 0.2299" 15/64 and over Heavier than #4 gauge		Over 0.1799" 3/16" and over Heavier than #7 gauge
Strip	0.2030" and under Under 13/64" #5 gauge and lighter	0.2299" and under 7/32" and under #4 gauge and lighter		
Sheet			0.2299" and under 7/32" and under #4 gauge and lighter	0.1799" and under 11/64" and under #7 gauge and lighter

Exhibit I

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Exhibit II

STEEL CONSUMPTION FOR THE TOTAL MARKET BY PRODUCT AND REGION

(Thousands of Tons)

STEEL PRODUCT	TOTAL CONSUMPTION	WESTERN CANADA	SELECTED STATES
Plate	495	365	130
Hot Rolled Sheet & Strip	273	144	129
Cold Rolled Sheet & Strip	207	20	187
Galvanized Sheet & Strip	253	136	117
Hollow Structural Sections	72	68	4
TOTAL CONSUMPTION	1,300	733	567

NOTE: 1. Flat rolled steel figures do not include steel used for the manufacture of pipes and tubes, or tinplate steel.

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TOTAL STEEL CONSUMPTION IN WESTERN CANADA

1973

BY PRODUCT AND PROVINCE

(Tons)

STEEL PRODUCT	WESTERN CANADA	BRITISH COLUMBIA	ALBERTA	SASKATCHEWAN	MANITOBA	NORTHWESTERN ONTARIO
Plate	365,000	120,000	130,000	15,000	90,000	10,000
H.R. Sheet & Strip	144,000	55,000	20,000	16,000	50,000	3,000
C.R. Sheet & Strip	20,300	6,000	4,000	200	10,000	100
Galvanized	136,200	55,000	41,500	14,000	25,000	700
Hollow Structurals	67,500	10,000	20,000	6,500	30,000	1,000
TOTAL CONSUMPTION	733,000	246,000	215,500	51,700	205,000	14,800

NOTE: 1. Flat rolled steel figures do not include steel used for the manufacture of pipes and tubes, or tinplate steel.

2. Approximately 75% of the C.R. Sheet & Strip and 19% of the Galvanized is imported.

Exhibit III

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TOTAL STEEL CONSUMPTION IN SELECTED STATES

1973

BY PRODUCT AND STATE

(Tons)

STEEL PRODUCT	UPPER MIDWEST	MONTANA	N. DAKOTA	MINNESOTA	S. DAKOTA	WYOMING
Plate	130,300	4,800	4,000	115,000	4,500	2,000
H.R. Sheet & Strip	128,900	2,000	2,500	120,000	3,500	900
C.R. Sheet & Strip	187,000	1,300	1,500	180,000	3,500	700
Galvanized	116,500	8,000	8,500	85,000	11,000	4,000
Hollow Structurals	4,300	700	700	1,500	900	500
TOTAL CONSUMPTION	567,000	16,800	17,200	501,500	23,400	8,100

NOTE: Flat rolled steel figures do not include steel used for the manufacture of pipes and tubes, or tinplate steel.

Exhibit IV

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STEEL PLATE CONSUMPTION
BY PRODUCT AND REGION
(Tons)

PRODUCT DETAILS		WESTERN* CANADA	BRITISH COLUMBIA	ALBERTA	SASKATCHEWAN	MANITOBA	SELECTED** STATES
Gauge	3/8" and under	181,800	72,000	52,000	12,800	45,000	91,200
	over 3/8"	173,200	48,000	78,000	2,200	45,000	39,100
Width	60" and less	118,200	36,000	26,000	11,200	45,000	91,200
	over 60"	236,800	84,000	104,000	3,800	45,000	39,100
Surface	black	331,700	120,000	130,000	14,200	67,500	97,800
	pickled	23,300	NIL	NIL	800	22,500	32,500
TOTAL CONSUMPTION		355,000	120,000	130,000	15,000	90,000	130,300

* The Canadian total figures do not include Northwestern Ontario which accounts for less than 3% of the total Western Canadian plate consumption.

** U.S. figures are estimates based on the Minnesota market which accounts for 88% of the Selected States plate consumption.

Exhibit V

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HOT ROLLED SHEET AND STRIP CONSUMPTION

BY PRODUCT AND REGION
(Tons)

PRODUCT DETAILS		WESTERN* CANADA	BRITISH COLUMBIA	ALBERTA	SASKATCHEWAN	MANITOBA	SELECTED** STATES
Width	60" and less	124,400	46,800	19,000	13,600	45,000	116,000
	over 60"	16,600	8,200	1,000	2,400	5,000	12,900
Surface	black	100,400	46,800	20,000	13,600	20,000	32,200
	pickled	40,600	8,200	NIL	2,400	30,000	96,700
TOTAL CONSUMPTION		141,000	55,000	20,000	16,000	50,000	128,900

* Canadian total figures do not include Northwestern Ontario which accounts for about 2% of the total Western Canada H.R. sheet and strip consumption.

** U.S. figures are estimates based on the Minnesota market which accounts for 93% of the total Selected States H.R. sheet and strip consumption.

Exhibit VI

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COMPARISON OF CURRENT CANADIAN AND U.S. STEEL PRICES

(Per cwt.)

PRODUCT DESCRIPTION	CANADIAN MILL PRICES			U.S. MILL PRICES	
	DATE EFFECTIVE	CANADIAN DOLLARS	IN U.S. DOLLARS PLUS DUTY	DATE EFFECTIVE	U.S. DOLLARS
Plate - base price	Jan. 1, 1974	7.85	8.65	Jan. 1, 1974	9.15
H.R. Sheet - Min. coil basis	Mar. 11, 1974	8.30	9.15	Jan. 1, 1974	8.675
C.R. Sheet - Min. coil basis	Feb. 4, 1974	10.00	11.07	Oct. 1, 1973	10.30
Galvanized - G90 coating					
48" X 22 gauge x coil	Jan. 28, 1974	12.10	13.50	Jan. 1, 1974	12.775
48" X 10 gauge x coil	Jan. 28, 1974	10.45	11.67	Jan. 1, 1974	11.075
Hollow Structurals - base price	Jan. 1, 1974	11.50	11.89		11.50

SOURCE: The Steel Company of Canada and U.S. Steel International, Toronto.

NOTE:
1. Canadian prices converted into U.S. dollars using an exchange rate of $0.9755 Canadian per dollar U.S.
2. Canadian and U.S. prices are F.O.B. mill.

Exhibit VII

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FREIGHT RATES TO CANADIAN DESTINATIONS

(Per cwt.)

STEEL MILL LOCATION	DESTINATIONS				
	THUNDER BAY	WINNIPEG	REGINA	CALGARY	VANCOUVER
Hamilton	($1.20)	$1.82	$2.46	$2.76	$2.20 [2]
Sault Ste. Marie	(0.98)	(1.36)	(1.98)	(2.35)	2.12
Regina	(1.04)	(0.42)	-	(0.66)	(1.23)
					0.89

SOURCE: The Steel Company of Canada
The Algoma Steel Corporation
Interprovincial Steel and Pipe Corporation

NOTE:
1. Above rates are based on a minimum railcar load of 80,000 pounds except for figures in brackets which are truck rates generally based on a 40,000 pound minimum load.

2. Hamilton to Vancouver rates are currently being increased; the above rate is an estimate and will probably be increased by a further 20% in July, 1974.

3. Rates are current as of March 6, 1974.

Exhibit VIII

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FREIGHT RATES TO U.S. DESTINATIONS

(Per Cwt.)

STEEL MILL LOCATION	DESTINATIONS				
	MINNEAPOLIS MINNESOTA	SIOUX FALLS S. DAKOTA	FARGO N. DAKOTA	CHEYENNE WYOMING	BILLINGS MONTANA
CHICAGO, ILLINOIS	$0.69	$0.90	$1.03	$1.40	$2.17
REGINA, SASKATCHEWAN	1.80	(1.64)	(1.17)	(1.67)	(1.11)
SAULT STE. MARIE, ONTARIO	0.92				
PROVO, UTAH			2.43	0.90	1.44
FONTANA, CALIFORNIA				2.55	1.89
OAKLAND, CALIFORNIA					1.86

SOURCE: Burlington Northern Inc.

Interprovincial Steel and Pipe Corporation

NOTES:
1. Above rates are based on a minimum railcar load of 80,000 pounds except for figures in brackets which are truck rates based on a 40,000 pound minimum load.
2. All rates are current as of March 6, 1974 and include the 2.1% railway surcharge effective February 1, 1974.

Exhibit IX

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Exhibit X

IMPORT TARIFFS ON STEEL PRODUCTS ENTERING THE UNITED STATES

PRODUCT DESCRIPTION		ITEM NUMBER	RATES OF DUTY
Hot Rolled	Plates	6088420	7.5%
	Sheets (black)	6088440	7.5%
	Sheets (pickled)	6088742	8.0%
Cold Rolled	Sheets	6088744	8.0%
Galvanized	Sheets valued over $10/cwt.	6089530	10¢/cwt. +8.0%
	Sheets valued not over $10/cwt.	6089430	9.0%
Strips	Lighter than 31 gauge		
	hot rolled	6090220	6.0%
	cold rolled	6090240	6.0%
	31 to 18 gauge		
	hot rolled	6090320	8.5%
	cold rolled	6090340	8.5%
	Heavier than 18 gauge		
	hot rolled	6090420	9.5%
	cold rolled	6090440	9.5%
Hollow Structurals			10¢/cwt.

Source: Tariff schedules of the United States, annotated (1972), Schedule 6

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Exhibit XI

LAID DOWN PRICE OF
PLATE AND H.R. SHEET AND STRIP
(Per Cwt.)

DESTINATION	STEEL MILL LOCATION				
	HAMILTON	SAULT STE. MARIE	REGINA	CHICAGO	PROVO
Vancouver					
Plate	$10.05	$ 9.97	$ 8.74	$	$
H.R. S & S	10.50	10.42	9.19		
Winnipeg					
Plate	9.67	9.21	8.27		
H.R. S & S	10.12	9.66	8.72		
Thunder Bay					
Plate	9.05	8.83	8.89		
H.R. S & S	9.50	9.28	9.34		
Minneapolis, Minn.					
Plate		9.57	10.45	9.84	
H.R. S & S		10.07	10.95	9.37	
Sioux Falls, S. Dakota					
Plate			10.29	10.05	
H.R. S & S			10.79	9.58	
Fargo, N. Dakota					
Plate			9.82	10.18	11.58
H.R. S & S			10.82	9.71	11.11
Cheyenne, Wyoming					
Plate			10.32	10.55	10.05
H.R. S & S			10.82	10.08	9.58
Billings, Montana					
Plate			9.76	11.32	10.59
H.R. S & S			10.26	10.85	10.12

Notes:
1. The lowest laid down prices are underlined.
2. Steel prices from Exhibit VII.
3. Transportation rates from Exhibits VIII and IX.
4. Rates of duty from Exhibit X.

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Exhibit XII

FOREIGN EXCHANGE RATES

CHANGES IN QUARTERLY RATES FROM 1969 AVERAGE MID-RATES

(In Canadian Dollars)

	U.S. DOLLAR	JAPANESE YEN	BRITISH POUND	GERMAN MARK
1969 AVERAGE MID-RATES	$1.0768	$0.003005	$2.5739	$0.2746
1970 1st Quarter	-0.4%	-0.2%	0.2%	6.1%
2nd Quarter *	-2.4	-1.5	-0.9	6.3
3rd Quarter	-5.0	-5.0	-5.1	2.6
4th Quarter	-5.3	-5.1	-5.4	2.1
1971 1st Quarter	-6.3	-5.1	-5.4	-0.1
2nd Quarter	-6.0	-5.4	-4.9	2.3
3rd Quarter **	-5.7	-2.9	-3.6	8.3
4th Quarter	-7.1	2.3	-2.5	10.4
1972 1st Quarter	-6.9	8.9	1.2	14.3
2nd Quarter	-8.3	6.4	-0.2	13.3
3rd Quarter	-8.7	-2.2	-6.6	12.6
4th Quarter	-8.2	-1.6	-9.2	12.4
1973 1st Quarter ***	-7.6	18.9	-6.3	21.2
2nd Quarter	-7.2	25.7	-1.7	33.4
3rd Quarter	-7.0	26.1	-3.4	52.8
4th Quarter	-7.3	21.0	-7.6	43.1
SELLING RATES MARCH 1, 1974	$0.9755	$0.003360	$2.2232	$0.3675
CHANGE FROM 1969 AVERAGE MID-RATES	-9.4%	11.8%	-13.6%	33.8%

SOURCE: Foreign Exchange Department, The Royal Bank of Canada

* Canadian dollar floated in May, 1970
** President Nixon introduced wage and price controls on Aug. 15, 1971
*** Japan floated the yen in February, 1973

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Exhibit XIII

STEEL IMPORTS THROUGH BRITISH COLUMBIA PORTS

1972-1973

BY PRODUCTS

(Tons)

PRODUCTS AND DIMENSIONS		1972	1973
Plate	Over 60"	116,250	141,000
	60" and under	52,250	47,300
Total		168,500	188,300
Hot Rolled Sheet & Strip	Over 51"	13,900	17,100
	51" and under	83,450	71,800
Total		97,350	88,900
Cold Rolled Sheet & Strip	Over 51"	300	220
	51" and under	13,450	14,900
Total		13,750	15,120
Total Imports		318,400	318,420

Source: Statistics Canada by special request

Note: These figures include steel used in the manufacture of pipes and tubes.

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APPARENT CONSUMPTION OF FLAT ROLLED STEEL PRODUCTS IN WESTERN CANADA

1968-1972

(Thousands of Tons)

	PLATE			SHEET AND STRIP		
YEAR	WESTERN CANADA	PROPORTION TOTAL CANADA (%)	IMPORTS (%)	WESTERN CANADA	PROPORTION TOTAL CANADA (%)	IMPORTS (%)
1968	447	39.0	13.7	187	6.8	25.9
1969	515	44.3	26.5	267	8.6	38.2
1970	482	37.0	22.1	216	7.2	31.2
1971	508	39.9	23.7	257	6.7	42.0
1972	615	43.4	28.2	312	6.3	50.8

GROWTH RATES

	PLATE	SHEET AND STRIP
1968-72	6.4%	10.4%

Source: Statistics Canada's special reports, "Regional Distribution of Domestic Rolled Steel Shipments". Import data obtained by special request from Statistics Canada.

Notes:
1. Values include steel for the manufacture of pipes and tubes.
2. Sheet and Strip volumes include Hot Rolled, Cold Rolled, Galvanized and Tinplate steel.
3. Approximately 75% of imported Plate is greater than 60" wide.
4. Approximately 17% of imported Sheet and Strip is greater than 51" wide.

Exhibit XIV

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APPARENT CONSUMPTION OF FLAT ROLLED STEEL PRODUCTS IN CANADA

1963-1973

(Thousands of Tons)

	PLATE		H.R. SHEET AND STRIP		C.R. SHEET AND STRIP		GALVANIZED	
YEAR	VOLUME	PER CENT IMPORTED	VOLUME	PER CENT IMPORTED	VOLUME	PER CENT IMPORTED	VOLUME	PER CENT IMPORTED
1963	785	9.8	900	10.1	630	3.2	347	1.5
1964	914	8.0	1,095	17.7	735	2.7	415	1.5
1965	1,144	19.0	1,249	16.8	828	4.0	468	1.7
1966	1,074	17.0	1,114	7.2	801	2.9	488	1.5
1967	1,031	16.1	1,123	7.3	766	2.8	463	1.6
1968	1,147	13.6	1,374	6.9	873	3.4	513	1.4
1969	1,163	20.9	1,536	13.1	1,004	9.2	553	3.0
1970	1,305	11.6	1,532	9.5	911	5.3	562	3.1
1971	1,273	19.0	2,016	19.9	1,201	17.8	649	7.5
1972	1,419	21.2	2,355	18.4	1,309	19.0	695	0.2
1973	1,488	19.4	2,693	12.2	1,399	14.5	876	4.2
	GROWTH RATES							
1963-73	5.4%		10.5%		7.5%		7.7%	
1968-73	5.5%		15.1%		10.3%		10.6%	

Sources: Statistics Canada Catalogues 41-001 and 65-007, December Issues 1963 to 1973.

Notes: 1. Includes steel for the manufacture of pipes and tubes.

2. Cold Rolled includes electrical steel (silicon steel) and tinplate steel.

Exhibit XV

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Exhibit XVI

IMPORTS OF STEEL VIA NORTH DAKOTA AND MINNESOTA

1972

(Tons)

STEEL PRODUCT	IMPORTS
Plates	2,200
H.R. Sheet and Strip	12,350
C.R. Sheet and Strip	19,100
Galvanized Sheet	5,800
TOTAL	39,450

Source: U. S. Department of Commerce; Minneapolis Regional Office and Canadian Consulate in Minneapolis.

Notes:

1. Approximately 29,500 tons or 75% of the total were imported from Canada; 99.7% of this amount from Ontario.

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Exhibit XVII

INDUSTRIAL CONSUMPTION OF PLATE AND SHEET AND STRIP IN WESTERN CANADA BY INDUSTRIAL CLASSIFICATION AND REGION

INDUSTRY	PRAIRIES		BRITISH COLUMBIA	
	PLATE	SHEET & STRIP	PLATE	SHEET & STRIP
Metal Fabricating Industries	74%	56%	77%	67%
Boiler and Plate Works	12	3	6	1
Fabricated Structural Metal	39	2	45	2
Ornamental and Architectural	2	4	2	
Metal Stamping, Pressing and Coating	10	29	15	52
Hardware, Tool and Cutlery			3	
Heating Equipment Mfg.		9	2	
Machine Shops	1	1	1	3
Misc. Metal Fabricating Ind.	10	8	3	9
Machinery Industries	22%	27%	12%	3%
Agricultural Implement	9	11		
Misc. Machinery and Equipment Mfg.	13	16	12	3
Comm. Refrigeration and Air Conditioning				
Office and Store Machinery				
Transportation Equipment Industries	4%	8%	10%	20%
Truck Body and Trailer Mfg.	2	5	2	3
Motor Vehicle Parts and Accessories	2	3		
Railroad Rolling Stock				
Shipbuilding and Repair			8	16
Boatbuilding and Repair				
Misc. Vehicle Mfg.				1
Electrical Products Industries	nil	8%	1%	10%
Small Electrical Appliances				3
Lighting Fixtures		5		
Communications Equipment				
Electrical Industrial Equipment		2		
Electric Wire and Cable				
Misc. Electrical Products		1	1	7

Source: Statistics Canada regional consumption data for 1971 by special request

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Exhibit XVIII

CANADIAN STEEL INGOT PRODUCTION

1963-1974

(Thousands of Tons)

YEAR	STELCO	DOFASCO	ALGOMA	TOTAL BIG 3	TOTAL CANADA	PROPORTION BIG 3
1963	3,110	1,391	2,092	6,593	8,065	81.7%
1964	3,479	1,584	2,301	7,364	8,969	82.1
1965	3,846	1,785	2,486	8,117	9,866	82.3
1966	3,794	1,877	2,347	8,018	9,814	81.7
1967	3,966	1,879	2,073	7,918	9,551	82.9
1968	4,485	2,180	2,261	8,926	11,109	80.3
1969	3,670*	2,279	1,725*	7,674	10,152	75.6
1970	4,801	2,322	2,495	9,618	12,154	79.1
1971	4,673	2,468	2,360	9,501	11,964	79.4
1972	5,031	2,773	2,426	10,230	12,894	79.3
1973	5,723	3,036	2,650	11,409	14,550	78.4
1974**	5,850	3,250	2,850	11,950	15,200	78.6

GROWTH RATES

1963-73	5.1%	7.3%	1%	4.5%	5.1%
1968-73	6.3%	6.8%	5%	6.1%	6.0%

Sources: Company Annual Reports and Research Brief by Pitfield Mackay Ross & Company Limited

* Operations interrupted by strikes in 1969

** Estimated

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Exhibit XIX

PROJECTION OF STEEL PRODUCTION CAPACITIES IN ONTARIO

1972-1978

(Millions of Ingot Tons)

YEAR	STELCO	DOFASCO	ALGOMA	TOTAL	INCREASE OVER PREVIOUS YEAR
1972	5.4	2.9	2.6	10.9	
1973	5.7	3.0	2.7	11.4	4.6%
1974	5.9	3.3	3.0	12.2	7.0%
1975	6.0	3.4	4.0	13.4	9.8%
1976	6.2	3.5	4.1	13.8	3.0%
1977	6.6	3.6	4.2	14.4	4.3%
1978	7.3	3.6	4.3	15.2	5.6%

SOURCES: Statistics Canada and Company sources

NOTE:
1. The average projected growth rate for producers' steel ingot capacities from 1972 to 1978 is approximately 5.8% per year.
2. Since Dofasco has not announced plans for a new melt shop and hot rolling mill, we have assumed no substantial capacity increases for 1977 and 1978.

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EXHIBIT XX

LIST OF ORGANIZATIONS CONTACTED

STEEL MILLS

The Steel Company of Canada, Hamilton
Dominion Foundries and Steel Limited, Hamilton
The Algoma Steel Corporation Limited, Sault Ste. Marie
Interprovincial Steel and Pipe Corporation Limited, Regina
U.S. Steel International, Toronto

STEEL SERVICE CENTRES

Brayshaw Steel Limited, Thunder Bay
Dominion Bridge Company Limited, Winnipeg
Drummond, McCall & Co. Limited, Winnipeg
Russelsteel Limited, Winnipeg
Wilkinson Company Limited, Saskatoon
Shragg Steel, Regina
Russelsteel Steel Ltd, Regina
Dominion Bridge Company Limited, Regina
Westeel-Rosco Limited, Regina
Drummond, McCall & Co. Limited, Calgary
Mueller Metals Limited, Calgary
Quadra Steel Limited, Calgary
Russelsteel (Alberta) Limited, Calgary and Edmonton
Dominion Bridge Co. Limited, Calgary and Edmonton
Wilkinson Company Limited, Calgary and Edmonton
A.C. Leslie & Co. Ltd., Edmonton
Dominion Bridge Company Ltd., Vancouver
A.C. Leslie & Co. Ltd., Vancouver
A.J. Forsyth & Co. Ltd., Vancouver
MacQuarrie Steel Limited, Burnaby
Quadra Steel Limited, Vancouver
Westeel-Rosco Limited, Vancouver

STEEL SERVICE CENTRES, CONT'D.

Wilkenson Company Limited, Vancouver
Lambton Steel Limited, Vancouver
Joseph T. Ryerson & Son Inc., Minneapolis, Minn.
Fargo Steel Products Co., Fargo, N. Dakota
Tri-State Steel Co., Cheyenne, Wyoming
Northland Steel Co., Billings, Montana
Paper Calmenson & Co., St. Paul, Minn.
Burkhardt Steel, Denver, Colo.
Egger Steel Co., Sioux Falls, S. Dakota

STEEL USERS

Thunder Bay

Canadian Car Division, Hawker Siddeley

Manitoba

Canadian Co-operative Implements, Ltd., Winnipeg
Versatile Manufacturing Ltd., Winnipeg
Behlen-Wicks Company Ltd., Brandon
Flyer Industries, Fort Gary
Canadian Steel Tank, Ltd., Brandon
Metal-Pac Mfg. Ltd., Fort Gary
Empire Sheet Metal Mfg. Co. Ltd., Winnipeg
Inland Steel & Forgings Ltd., Winnipeg
Canadian Rogers Western (1971) Ltd., Winnipeg
Elite Metal Products, Ltd., Winnipeg
MacDonald Brothers Sheet Metal, Winnipeg
Killbery Ind. (1971) Ltd., Winnipeg
National Products Ltd., Winnipeg
Kipp Kelly Limited, Winnipeg
Joy Manufacturing Co. (Canada) Ltd., Winnipeg
Westfield Industries Ltd., Rosenort
Farm King Limited, Morden
Big "M" Mfg. Ltd., Neepawa

STEEL USERS, CONT'D.

Manitoba, continued

Dalman Enterprises Ltd., Killarney
Dominion Bridge Co. Ltd., Fabricating Division, Winnipeg
C.J. Malach Co. Ltd., Fort Whyte

Saskatchewan

Westeel - Rosco Limited, Regina
Armco Canada Ltd., Regina
Fairford Industries, Moose Jaw
Richardson Culvert, Saskatoon
Rock-O-Matic Ltd., Varda
Anderson Manufacturing Ltd., Southey
Degelman Industries Ltd., Regina
Morris Rod Weeder, Yorkton
Leon's Mfg. Co. Ltd., Yorkton
Harding Industries Limited, Saskatoon
Fulco Metal Products Ltd., Regina
Inland Metal Mfg. Co. Ltd., Regina
Crown Mfg. Ltd., Regina
Western Roto Thresh Ltd., Saskatoon
Westank Industries Ltd., Regina
Craik Mfg. Co. Ltd., Craik
Sakundiak Farm Equipment, Regina
Mel-Com Industries Ltd., Imperial
Centra Canadian Structures, Limited, Regina
Signal Industries Ltd., Regina
Regina Iron Works Ltd., Regina

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Exhibit XX-4

STEEL USERS, CONT'D.

Alberta

Armco Canada Ltd., Edmonton
Tested Truss, Calgary
Edwards Rod Weeder Ltd., Lethbridge
Westland Metals Ltd., Calgary
EZEE On Mfg. Ltd., Vegreville
Kaps Mfg. Ltd., Edmonton
Wenco Industries Limited, Calgary
Great West Steel Ind. Ltd., Calgary
Trus Joist (Western) Ltd., Claresholm
Universal Industries Ltd., Lloydminster
Maloney Steel - Crafts Ltd., Calgary
Int'l Cooperage Co., Lloydminster
Kirchner Machine Ltd., Lethbridge
Babco Electric and Engine Ltd., Calgary
Corod Mfg. Ltd., Edmonton
Triangle Steel Fabricators Ltd., Edmonton
Westal-Rosco Ltd., Calgary

British Columbia

TPL Industries Ltd., Burnaby
Coldform Industries Ltd., Richmond
Hayes Trucks Ltd., Vancouver
Freightliner of Canada Ltd., Burnaby
Bradson Machine Ltd., Vancouver
Ahoy Industrial Corp. Ltd., N. Vancouver
Moore Canada Ltd., Richmond
Elliott Steel Ltd., Vancouver
Dominion Bridge Co. Ltd., Vancouver
D. Tidy Welders, Vancouver
Monarch Steelcraft Ltd., Vancouver

STEEL USERS, CONT'D.

British Columbia

Sandford Pearce Ltd., Vancouver
Jasco Mfg. Ltd., Burnaby
Lincon Steel Products Ltd., Richmond
Canwest Metal Sections Ltd., Granville Island
Armco Canada Ltd., Vancouver
Spir-L-OK Ind., Vancouver
Synkoloid Metal Prod., Vancouver

U.S. Upper Midwest

Sioux Steel Co., Sioux Falls, S. Dakota
Schwartz Farm Machinery, Sioux Falls, S. Dakota
Empire Steel Manufacturing Co., Billings, Montana
Marketing Specialities & Mfg., Billings, Montana
Darbo Development Co., Billings, Montana
Westeel-Rosco, Fargo, N. Dakota
H.V. Johnson, Fargo, N. Dakota
Tri-State Steel Co., Cheyenne, Wyoming
Metal-Matic Inc., Minneapolis, Minn.
Tubeco Division Hofmann Ind., Owatonna, Minn.

Other Organizations

Burlington Northern Inc., Minneapolis, Minn.
Canadian Consulate & Trade Commission, Minneapolis, Minn.
U.S. Department of Commerce, Minneapolis, Minn.
Business & Industry Magazine, Des Moines, Iowa
National Small Business Administration, Washington, D.C.
Statistics Canada, Ottawa
The Royal Bank of Canada, Toronto
Canadian Steel Service Centre Institute, Toronto
Pitfield, Mackay, Ross & Company Limited, Toronto

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