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GOVERNMENT OF CANADA

DEPARTMENT OF REGIONAL ECONOMIC EXPANSION

THE MARKET FOR HOT AND COLD FORMED HOLLOW STRUCTURAL SECTIONS

MARCH, 1974

#1962

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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 Hot and Cold Formed Hollow Structural Sections". 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 hollow structural sections 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 both hot and cold formed hollow structural sections in round, square and rectangular cross sections.

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 manufacturing process and wall thickness, 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

- During 1973, IPSCO's primary market regions consumed approximately 67,000 tons of hollow structural sections. This region comprises British Columbia, the Prairies and Montana.
- Approximately 48,000 tons or 72% is manufactured by the hot forming process.

- Approximately 57,000 tons or 85% has wall thicknesses of ¼" or less.
- The demand for hollow structural sections in Western Canada is expected to increase by 6% to 8% 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

Hollow structural sections are a tubular product, generally fabricated from hot rolled sheet and strip steel unless special surface qualities are required. Because of their shape, they are relatively light compared to their load carrying capability and consequently economic for many applications. Generally, they are most efficiently used in high load bearing applications such as columns and trusses.

The terms hot formed and cold formed are strictly manufacturing terms and refer to two processes used in Canada to manufacture hollow structural

sections (H.S.S.). During our study we learned that most users are completely unaware of the hot or cold formed distinction. Generally H.S.S. are purchased on the basis of wall thickness and standard cross section dimensions.

Hot formed H.S.S. are made on a continuous weld mill which preheats the steel prior to forming and welding. This type of mill is used to produce structurals with a circumference of less than 16". Since the steel is heated, hot formed hollow structurals have a poorer surface finish than cold formed. Cold formed structurals are made on an electric resistance weld (E.R.W.) mill and produce sections with a much smoother surface which is suitable for painting and exposed applications. Cold formed H.S.S. have a circumference greater than 16". Generally, as the cross section dimensions increase the wall thickness increases as well. For example, Stelco produces the following square sections: 2" x 2" x 0.11"; 4" x 4" x 3/8"; and 12" x 12" x ¼".

Most users prefer to buy standard size H.S.S. that are reliably produced within normal mill tolerances to avoid jigging and other fabricating problems.

5. Consumption by Geographic Regions

5.1 All Geographic Regions

A summary of consumption of hollow structural sections by the major geographic regions covered in this study is shown in Exhibit I, "Steel Consumption for the Total Market". Of the 72,000 tons of H.S.S. consumed in all regions, Western Canada accounts for approximately 68,000 tons or 94%.

A more detailed analysis of Western Canada's consumption by region is shown in Exhibit II, "Total Steel Consumption in Western Canada". The provinces, British Columbia, Alberta and Manitoba clearly dominate the Western Canada market for hollow structural sections. These three provinces account for 60,000 tons, or almost 89% of total H.S.S. consumption.

A similar analysis of U.S. Upper Midwest consumption presented in Exhibit III, "Total Steel Consumption in Selected States", shows that Minnesota is the dominant market with approximately 1,500 tons, or 35% of total H.S.S. consumption. However, the total U.S. Upper Midwest accounts for only 5½% of the total consumption.

5.2 Canadian Geographic Regions

A more detailed analysis of H.S.S. consumption by manufacturing process and wall thickness for selected geographic regions is shown in Exhibit IV, "Consumption of Hollow Structural Sections". Approximately 47,000 tons, or 70% of Western Canada H.S.S. consumption is produced by the hot forming process. About 56,000 tons, or 83% of the H.S.S. consumption is of ¼" or less wall thickness.

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 V, "Comparison of Current Canadian and U.S. Steel Prices".
- Canadian freight rates as shown in Exhibit VI, "Freight Rates to Canadian Destinations".
- American freight rates as shown in Exhibit VII, "Freight Rates to U.S. Destinations".
- Rates of duty in Exhibit VIII, "Import Tariffs on Steel Products Entering the United States".

On the basis of this information and the prices shown in Exhibit IX, "Laid Down Prices of Hollow Structural Sections", we have estimated the following market for hollow structural sections:

- During 1973, IPSCO's primary geographic region consumed 68,000 tons of hollow structural sections. This region comprised British Columbia, the Prairies and Montana.
- Approximately 48,000 tons or 70% was manufactured by the hot forming process.
- Approximately 57,000 tons or 84% had wall thicknesses of ¼" or less.

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 V, "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 X, "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 VI, "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 VII, "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. Growth Potential

Hollow structural sections are used primarily in the steel fabrication, construction, mobile home and agricultural industries. They are rapidly gaining acceptance by architects and can save a great deal of shop and field fabrication time. Hollow structural sections are being used increasingly as substitutes for wide flange beams, adding to normal growth.

We anticipate that the agricultural implement, mobile home, and trailer markets will continue to hold firm for the next two years and that there will be significantly increased construction activity during the next five years in Western Canada. Consequently, we expect that demand for hollow structural sections should increase by 6% to 8% per year over the next five years.

8. Competitive Sources of Steel Products

8.1 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.

8.2 Domestic Steel

The major manufacturers of hollow structural sections in Canada are: Stelco, Sonco Steel Tube, IPSCO, Prudential Steel, Standard Tube, and Barton Tubes. IPSCO is the only producer of hollow structural sections in Western Canada that has local steel making and rolling facilities. Although Prudential Steel, a subsidiary of Dofasco, has hollow structural manufacturing facilities in Western Canada, it must either buy hot rolled sheet and strip steel on the open market in Western Canada, or transport it all the way from Hamilton. Consequently, if IPSCO's hot rolled sheet and strip steel costs are similar to Dofasco's, IPSCO's should maintain its transportation advantage and compete effectively in Western Canada against all other domestic suppliers.

A summary of ingot ton production data for the three major steel producers is shown in Exhibit XI, "Canadian Steel Ingot Production". A schedule of announced steel making capacity increases over the next five years is shown in Exhibit XII, "Projection of Steel Production Capacities in Ontario". These announced increases average 5.8% per year over the five year period.

If a major steel consuming project, such as the MacKenzie Valley pipeline, is initiated during this five year period it is unlikely that announced increases in domestic steel production capacities 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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Exhibit I

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 II

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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 III

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CONSUMPTION OF HOLLOW STRUCTURAL SECTIONS

1973

BY PRODUCT AND REGION

(Tons)

PRODUCT DETAILS		WESTERN CANADA (1)	BRITISH COLUMBIA	ALBERTA	SASKATCHEWAN	MANITOBA
Manufacturing Process	Hot Formed	46,800	5,000	13,000	4,800	24,000
	Cold Formed	19,700	5,000	7,000	1,700	6,000
Wall Thickness	1/4" and under	55,500	7,500	19,000	6,000	23,000
	Over 1/4"	11,000	2,500	1,000	500	7,000
Total Consumption		66,500	10,000	20,000	6,500	30,000

Note: 1. The Canadian total figures do not include Northwestern Ontario which accounted for less than 2% of the total Western Canadian consumption of H.S.S.

Exhibit IV

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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 V

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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 VI

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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 VII

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Exhibit VIII

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 IX

LAID DOWN PRICE OF HOLLOW STRUCTURAL SECTIONS

SELECTED U.S. MARKETS

(Per Cwt.)

DESTINATION	REGINA	CHICAGO
Minneapolis, Minnesota	$13.69	$12.19
Sioux Falls, South Dakota	13.53	12.40
Fargo, North Dakota	13.06	12.53
Cheyenne, Wyoming	13.56	12.90
Billings, Montana	13.00	13.67

Notes

1. The lowest laid down prices are underlined.

2. Steel prices from Exhibit V.

3. Transportation rates from Exhibits VI and VII.

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Exhibit X

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 XI

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 XII

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 XIII

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

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

Price
Waterhouse
Associates
management consultants