

STRATEGIC ANALYSIS OF A
SMALL CONSULTING ENGINEERING FIRM

by

Wilhelm B. Kruger, P.Eng.

B.Sc., University of Alberta, 1970

PROJECT SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION
in the Faculty
of
Business Administration

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Simon Fraser University

April 1992

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APPROVAL

NAME: Wilhelm B. Kruger

DEGREE: Master of Business Administration

TITLE OF PROJECT: Strategic Analysis of a Small
Consulting Engineering Firm

SUPERVISING COMMITTEE:

Aidan Vining
Professor

John Richards
Associate Professor

Date Approved: 6 April 1992

SIMON FRASER UNIVERSITY
At Harbour Centre
Faculty of Business Administration

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Strategic Analysis of a Small Consulting Engineering Firm

Author:

(Signature)

W. B. KRUGER

(Name)

APRIL 9/92

(Date)

ABSTRACT

This document provides a strategic analysis of a small consulting firm in British Columbia, Canada. The analysis focuses on the impact of a changing environment, rapid growth, and changing technology.

The analysis considered financial information on the firm's competitors from interviews and on the consulting engineering industry from published private and government sources. The firm's financial statements were available for industry and year-to-year comparisons.

The analysis showed that the firm had developed sound strategies but did not always adhere to them. The firm's finances were acceptable but could be improved by operating closer to the stated strategies.

The analysis developed several strategic directions for growth and increased profitability. Implementation details of the recommended strategic alternatives will be developed at the corporate level.

ACKNOWLEDGEMENT

I wish to thank my children, Angela and Jason,
for their support and understanding during the
last three years

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1.0 Introduction

This document provides a current analysis of a small consulting engineering firm in British Columbia, Canada, and will focus on the impact of a changing environment, rapid growth and changing technology.

The firm is Civic Consulting Group Ltd. (Civic), a privately held corporation with a single office located in Surrey, British Columbia (BC). Civic provides services in the municipal engineering field to clients in the Lower Mainland of BC with a focus on the municipalities of Delta, Surrey and Langley.

For the purpose of this document, a small firm is defined as less than twenty-five staff members, a medium firm as twenty-five to seventy-five staff and a large firm as over seventy-five staff. A one-man operation (OMO) is defined as a firm of one to three staff members including a single professional.

2.0 Problem Statement

Civic is a young firm which has experienced rapid growth in its five years of operation. The firm is in the early stages of office automation (OA) and general computerization of all

design and administrative functions. The firm is also facing a rapidly changing environment as a result of expected new policies at the provincial level, a recession at the federal level, and technology-driven demands at the municipal level.

The problem is to control the impact of growth, manage the implementation of OA, and to anticipate and pre-empt the environmental effects.

3.0 Civic's Corporate History

Civic Consulting Group Ltd was incorporated in March 1987 and shortly afterwards opened an office in Surrey, BC, as a single shareholder OMO. The author joined the firm in October 1988 which brought the staff level to six, including a part-time secretary. Staff gradually increased to eighteen by the fall of 1991. Students generally added a bulge in the employment statistics during the summer months. Staff increased to twenty-three during the writing of this document. Staff includes five professionals, eight technologists, and ten technical and clerical support staff. Staff background is diverse ethnically, religiously, and technically.

At this time the shareholders are the founder (75%), the author (20%) and a senior designer (5%). Share value has

increased from \$12.50 per share in October 1988 to over \$50 per share.

The operation of the firm has generally been limited to municipal engineering for private, corporate and government clients in the Lower Mainland of BC. The firm moved into new and expanded facilities in June 1991.

4.0 Services for the Local Market

Civic provides a basket of products (services) generally summed up as municipal engineering consulting. Within this basket are several products, such as planning, engineering surveys, design, contract administration, inspection, and consultant co-ordination.

The market for projects in the Lower Mainland can be broadly divided into two categories - public and private works. Both categories can be further subdivided into sub-categories.

4.1 The Services

Most projects require the supply of more than one of the services offered by the firm.

4.1.1 Planning

All projects require some level of planning prior to proceeding with design. Planning may involve a simple lot

layout or establishing land uses and road patterns for a neighborhood. The more basic planning is handled in-house while major planning projects require the addition of a physical planning sub-consultant.

4.1.2 Engineering Surveys

Engineering survey has two components: the initial topographic survey and the later construction survey. The topographic survey provides the planner and the designer with a picture of the elevations and locations of the existing infrastructure or of the undeveloped ground. The construction survey provides markers which are used by the contractor for elevation and location control for the new works. Construction survey includes the as-constructed survey of the works for record purposes.

4.1.3 Design

The planning layout and the topographic survey form the basis for the design of the proposed works. The design may be for a new subdivision, upgrading of existing infrastructure, servicing a shopping center or providing sewer or water services to an old town or hamlet. Included in the design phase is the design, drafting, liaison with other consultants, and the administrative process of obtaining approval from municipal, provincial and federal approval authorities.

4.1.4 Contract Administration

This phase includes tender preparation, tender call, contract award recommendation, contract administration, payment recommendations, and release of securities from approving authorities.

4.1.5 Inspection

This phase includes inspection of the works during construction to ensure compliance with the design, applicable standards, by-laws, and regulations. It also includes the certification of the work for payment and record purposes.

4.1.6 Consultant Co-Ordination

Projects generally include sub-consultants such as legal surveyors and geotechnical specialists. The work of these consultants is coordinated by the prime consultant. Generally, Civic is the prime consultant on all projects except when architecture is the main component.

4.1.7 Other Services

Other services in the municipal field which are currently not offered by Civic are major transportation, large scale physical planning, landscaping, and legal survey.

4.2 The Market

Civic's services are marketed to clients - private and public - in the Lower Mainland. The firm has some projects in the interior but this market is not being pursued for reasons of logistics. Civic is looking at overseas work as part of a consortium.

4.2.1 Public Works

Work in this sector is currently limited to the Ministry of Highways and Transportation (MOTH) and to several of the local municipalities. Work with other municipalities, provincial ministries and federal departments has not been pursued for reasons of logistics.

4.2.1.1 MOTH

Work for MOTH has to date included pre-design for an interchange and the west approach in Castlegar, upgrading of a section of King George Highway, survey for the Lower Mainland District, and spin off work from the surveys. This represents a significant amount of work for a firm of Civic's size.

4.2.1.2 Municipalities

Municipal work includes road up-grading for several municipalities, arterial road relocation, gravity and pressure sewer systems for an old town, and numerous inspection and administration projects. Work is also

designed and administered for school boards and park departments.

4.2.2 Private Works

Private works can be categorized by size of development, or land use, or both. There are some differences between clients in different land uses, but the differences are more pronounced when based on size of project. The level of the client's sophistication, the level of command of the English language, the reasonableness of his demands and his honoring of financial commitments correlates well (either directly or inversely) to the size of the project.

4.2.2.1 Small Projects

First time developers of small projects are generally unsophisticated, underfinanced, have limited command of English and require a large amount of extra effort over and above the normal process. They are generally the first to default on payments (see Table 1) and provide little repeat business. They are price sensitive and therefore often shop for services.

Repeat clients with small projects are more sophisticated than first timers but still require more effort than the size of the project warrants. They are difficult at collection time but pay eventually. Generally they are a break-even proposition.

	Time Spent/ \$ of Fees	Bad Debt/ \$ of Fees
Small Project Non-Repeat Client	Highest	Highest
Small Project Repeat Client	High	Low to Medium
Medium Project	Medium	Low to Medium
Large Project	Lowest	Lowest

Based on information from Civic and five competitors

Table 1 Time - Fee - Bad Debt Mix

4.2.2.2 Large Projects

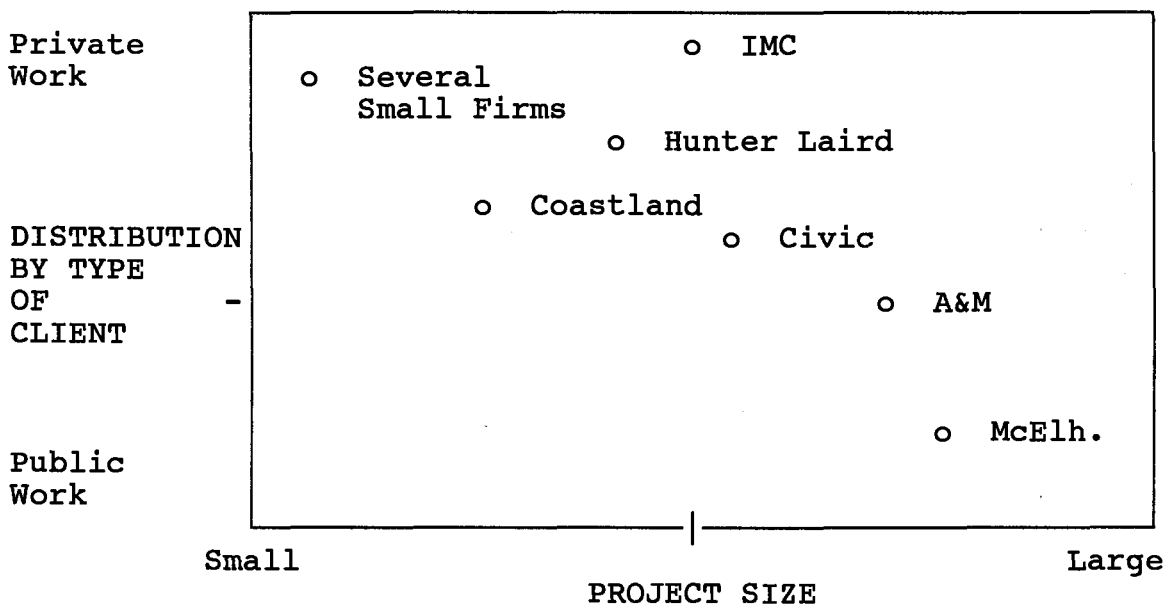
The developer is usually a professional representing a privately or publicly held corporation. He is sophisticated, generally well financed, firm (hardnosed) in his business dealings, but honors his financial commitments.

4.2.2.3 Architects

Architects often represent the developer as the prime consultant on projects where the land use requires the services of an architect. They vary from sophisticated and knowledgeable to totally lacking in business knowledge and financial control.

5.0 Competition in the Same Market

The municipal consulting engineering field in the Lower Mainland has firms from one-man operations to three of the nine largest firms (ISTC,1991) in Canada. Most of the direct competition for Civic comes from four firms in Surrey and one firm in New Westminister. A strategic grouping of the firms (The Surrey Group) is shown in Figure 1.



Based on an assessment of Civic, five competitors, and general industry information

Figure 1 Strategic Grouping

5.1 Coastland Engineering and Surveying Ltd.

Coastland Engineering and Surveying Ltd. (Coastland) is the smallest of the main competitors. The firm has a staff of five, including the two principals. Their expertise is in small to medium-sized residential developments. They have a

good reputation with developers and the municipalities.
Their pricing is slightly below average.

They offer basic planning, design and contract administration. Functions like engineering survey, legal survey and geotechnical are provided by sub-consultants.

5.2 IMC Consulting Group Ltd.

IMC Consulting Group Ltd. (IMC) is the local municipal engineering office of a Canada-wide multi-discipline consulting firm. Their Surrey office, in response to recent losses, downstaffed in 1991 to their present level of fifteen people, including three professionals. Their expertise is in medium-sized residential developments. Their reputation with developers and the municipalities improved after the downsizing. The pricing of their services is somewhat erratic.

IMC offers planning, design, contract administration and landscaping. Engineering surveys, legal surveys and geotechnical are provided by sub-consultants.

5.3 Hunter Laird Engineering Ltd.

Hunter Laird Engineering Ltd. (Hunter Laird) is a New Westminister based firm with a total staff of eighteen people including two professionals. Their expertise is in a wide range of residential developments with a fair expertise

in industrial development. Their reputation with developers and municipalities is that they are a "developer's consultant" providing economy designs at bargain fees. They are trying to establish a more mainstream reputation.

Hunter Laird offers basic planning, engineering surveys, design and contract administration. Legal surveys and geotechnical are provided by sub-consultants.

5.4 Aplin and Martin Consultants Ltd.

Aplin and Martin Consultants Ltd. (A&M) is the largest single office consultant in the area. They have a staff of sixty people including fourteen professionals. Their expertise covers a wide range of residential and industrial development and government work. Their reputation with developers and the municipalities is of good work at premium prices.

A&M offers planning, legal surveys, engineering surveys, design, contract administration, transportation, and landscaping. They are considering structural engineering and architecture. Geotechnical is provided by sub-consultants.

5.5 McElhanney Engineering Services Ltd.

McElhanney Engineering Services Ltd. (McElhanney) is a multi-office firm with its main engineering office located in Surrey. Almost half of their total staff of 140 people is

located in this office, including ten professionals. They concentrated their efforts in the last ten years on highway design and reduced their private developer work correspondingly. Their reputation with developers and the municipalities is for large projects at premium prices.

McElhanney offers planning, legal survey, engineering survey, design, contract administration, and transportation. Geotechnical is provided by sub-consultants.

6.0 Comparisons of Competitors and the General Industry

Comparative information on privately held consulting firms is generally only available through personal contacts. Some financial data on larger firms are available through sources such as Dun & Bradstreet (Dun & Bradstreet, 1991). Any comparison of firms should address three variables: 1) the fees billed per staff, 2) the market mix, and 3) the market share.

6.1 Fees Per Staff

The fees per staff member for Civic's five main competitors and several other firms are shown in Table 2. This information was obtained through interviews (Letter of Feb. 27/92, Appendix A) and through public information sources (Dun & Bradstreet, 1991). The average for all firms is approximately \$75 000 while the median is \$70 000. For the

Surrey Group the average is approximately \$79 000 and the median is between \$70 000 and \$75 000. If the reported high value is discarded, then the average and median change to approximately \$70 000.

	A&M	Acres	Civic	Coast-land	Delcan	Hunt. Laird
No. of Staff	60	655	18	5	600	18
Fees		\$49.9M	\$1.2M	\$0.6M	\$35.7M	\$1.2M
Fees/Staff		\$76220	\$66770	\$120000	\$59550	\$70000

	IMC	McElh.	Reid Crowt.	UMA Group	Wardrop	
No. of Staff	15	148	350	710	250	
Fees	\$0.8M	\$13.0M	\$20.3M	\$68.2M	\$16.2M	
Fees/Staff	\$53330	\$87840	\$57950	\$96110	\$64800	

Based on: Dun & Bradstreet, 1991

ISTC, 1991

Interviews and company records

Table 2 Comparable Financial Information

6.2 Services and the Geographic Market

Civic offers one basket of products - municipal engineering consulting. The market is private developers and public agencies needing consulting municipal engineering services. The geographic market focus is on the municipalities of Delta, Surrey and Langley with a secondary focus on Coquitlam and Port Coquitlam. Civic's main competitors provide the same products but some have a wider geographic market focus. The Product-Market Mix for the Surrey Group is shown in Table 3.

6.3 Market Share

Many firms compete for market share in the same geographic market as Civic. For any one firm to gain market share becomes more difficult as its existing market share increases. The "glass ceiling" on market share is believed to be in the order of 20% to 25%.

A matrix showing the six firms and their share of the private and public market in Civic's geographic market area is shown in Table 4. It should be noted that the total for the Surrey Group for each market is less than 100% since there are many firms operating in the same market.

Some of the individual percentages may seem at odds with Table 3, but it must be understood that some firms are also operating in other geographic markets, for example, most of

Market Segment	Product - Municipal Engineering					
	A&M	Civic	Coast.	HLaird	IMC	McElh.
PRIVATE						
Single family	40%	30%	50%	47%	70%	12%
Multi-family	7%	25%	20%	25%	25%	4%
Industrial	10%	5%	2%	13%	5%	2%
Commercial, Misc	3%	5%	3%	-	-	2%
Sub-Total	60%	65%	75%	85%	100%	20%
PUBLIC						
Municipalities	24%	25%	25%	10%	-	20%
MOTH	8%	10%	-	-	-	60%
Other Provincial	2%	-	-	-	-	-
Federal	6%	-	-	5%	-	-
Other	-	-	-	-	-	-
						-
TOTAL	100%	100%	100%	100%	100%	100%

Source: interviews by author

Table 3 Product - Market Mix

McElhanney's public work is in the Interior of BC. It is also interesting to note that A&M is at or near the "glass ceiling" for this geographic market.

Market Segment	Consulting Firm						
	A&M	Civic	Coast	HLaird	IMC	McElh.	Other
Private	20%	10%	5%	8%	10%	7%	40%
Public	20%	10%	5%	5%	-	10%	50%

Table 4 Geographic Market Share

7.0 Civic's Current Strategies

Civic has followed eight strategic thrusts in the last five years.

7.1 Diversification of Clientele

Civic has followed a strategy of diversification in its client base since it began operations. This means a mix of private and public works with a further mix of different clients within each of those categories. No one client exceeds 10% of the total work load.

7.1.1 Municipal Engineering for the Private Sector

Municipal engineering in the private sector has four main components: single family, multi-family, industrial and commercial developments. All components are cyclical and are also affected by the general economy. The economic effects differ between components. Project lead times also differ. The result is complex cycles of consulting work are being

generated. For example, the mid-1990 drop in single family development coincided with a sharp rise in multi-family and a gradual rise in industrial development. As a result, the firm's work load remained steady.

7.1.2 Municipal Engineering for the Public Sector

Municipal engineering in the public sector can be infrastructure upgrading or new works for municipalities. The work at the federal and provincial level is influenced more by political changes (eg., the Party's level of preference for in-house work) than by the general economy. At the municipal level the work is steadily increasing with little relationship to the economy.

Work for MOTH is at risk due to a change in government while municipal infrastructure upgrading is safe since the local politicians can not let the sewer or water system degrade. As a result, the firm's work load has increased but the MOTH component is at risk.

7.2 Diversification of Expertise

Civic has followed a strategy of expanding its range of expertise. Subdivision design formed the base, which has been expanded to include road rehabilitation, highway design and sewage pump stations. This diversification of expertise ties back to the first strategy of diversification of

clientele since the firm can now offer services to a wider range of clients.

7.3 Selection of Clients

Civic has a strategy of being selective in the type of client that is being promoted and accepted. The intent is to promote and accept sophisticated clients. Sophisticated clients require a high level of service but they generally work on larger projects and are financially responsible.

The promotion effort has closely followed the strategy, but the actual acceptance of contracts has strayed from the strategy. Word-of-mouth recommendations bring in a lot of unsophisticated prospective clients. It is morally difficult to reject their work. As a result, the firm still does many projects for clients who do not conform to the strategy.

7.4 Pricing and Service

Civic has followed a strategy of high quality and service at average to premium prices. This pricing strategy is consistent with other dimensions of Civic's strategy.

Unsophisticated clients with small projects are very demanding of time and management resources, yet they are also price sensitive. Their selection of a consultant is generally based on price only, not on quality of service. Sophisticated clients are generally less time demanding and

less price sensitive. They understand the value to the project from the consultant's quality and expertise and are therefore more willing to pay for the additional service. This strategy, like the earlier strategy on client acceptance, is too often violated when the spirit of competition for market share overtakes the business sense.

7.5 Selection of Staff

Civic has a dual strategy on staffing: selection on the basis of expertise and fit, and selection on the basis of greatest return.

Civic staff ranges in age from the early twenties to the mid fifties and comprises a wide range of technical and ethnic backgrounds. Selection is based on fit of expertise to the firm's long range plans and fit of personality with the existing staff. A candidate who scores negative on either criteria is not considered for employment. To date, this has given the firm a wide range of expertise and a good relationship between staff.

Selection on the basis of greatest return involves the hiring of junior staff when more production rather than special expertise is important. While the production of junior staff is less than for more experienced staff, the production per dollar of wages is generally greater, even after allowing for training costs from senior staff. The

difficulty is in striking a balance of junior and senior staff so that the junior staff receive adequate training and the senior staff is not stressed by the training. On review, the firm has often erred in not striking this balance.

7.6 Image and Appearance

Civic has a strategy of presenting a professional, business-like appearance: an attempt at looking good without looking extravagant. The office is located in a new, moderately priced professional building with good access for clients. The offices are spacious, enjoy natural light but do not have trapping like oak panelling. Company vehicles are plain but well kept. Project signs are clean and straight. All the things that say to a client: "Here is a firm that will do a good job for you at a reasonable price."

7.7 Technological Follower

Civic has a strategy of not being a technology leader but of being a close follower, thus staying ahead of the pack. For example, in the mid 1980's, firms started to convert their field operations to electronic equipment from optical equipment. Civic was not encumbered by a large investment in optical equipment and was therefore the first firm in the area with a totally electronic field operation.

In the office the process was slower. Typing became word processing in 1988 but design and drafting is only 40% electronic at the time of this report.

7.8 Controlled Growth

Civic has followed a strategy of controlled growth. Growth was seen as a method of increasing net income. The adjective "controlled" is added to reflect that the growth rate must not exceed the firm's ability to absorb new staff. Staff has to be comfortable with each other's abilities before new staff is added. The growth rate must also not exceed the firm's ability to finance the immediate wage expense until the increased receivables are collected. The firm has been conservative in adding new staff.

8.0 Civic's Competitive Advantages and Disadvantages

Civic enjoys several competitive advantages in its current market: size, location, diversity (clients and staff), personal knowledge, and management. Civic also suffers from several competitive disadvantages: size, location, training, and success.

8.1 Advantage: Size

Civic is in the process of moving from being a small to being a medium sized consulting firm. At this size it is

capable of handling large projects yet is still small enough to be responsive to individual needs.

8.2 Advantage: Location

Civic is located in the heart of the fastest growing municipality in the region and adjacent to other municipalities where the bulk of future population growth will occur. Some existing municipal infrastructure is reaching the end of its life cycle. As a result, the market for municipal consulting services is growing. Growth of the firm in line with the market is assured if all other factors are held constant.

8.3 Advantage: Client Diversity

Civic's diverse client base has largely removed the cyclical impacts of various market segments on the firm. A steady work load provides a constant employment base.

8.4 Advantage: Staff Diversity

The diversity of the staff's expertise allows the firm to promote its services to a wide client base. This in turn provides a steady work load. The two are therefore complementary.

8.5 Advantage: Personal Knowledge

The principals of the firm are well known in the industry, in the market and by the government regulatory authorities.

Clients are therefore confident that the firm will be able to steer their projects through the obstacles of the government approval process.

8.6 Advantage: Management

The management of Civic has more academic and practical business experience (as opposed to only engineering experience) than most firms in the area. The two senior principals have eight years of academic business training and thirty-five years of practical business experience.

8.7 Disadvantage: Size

Civic, even at its current staff level, can not handle many major projects without strain on the firm. Sophisticated clients are comfortable to assign large projects to the firm but are sometimes hesitant to assign major projects.

8.8 Disadvantage: Location

Civic is located in the centre of the development growth, but many of the large developers are located in Vancouver. Some feel that it is important to them that their consultant also have a Vancouver address.

8.9 Disadvantage: Training

Civic does not have a comprehensive policy on staff training, especially in the area of computer use. Many staff members have had some basic training with word

processors, spreadsheets and computer aided design and drafting (CADD) systems, but lack advance training to take full advantage of the power of those programs. As a result, proposals do not have that desktop-published "look". Design and drafting is less productive because of the less than optimal learning curve.

8.10 Disadvantage: Personal Knowledge

The principals and the senior staff embody most of the expertise and the appeal to the client. Staff changes can therefore result in a loss of expertise with a resultant loss of market share.

8.11 Disadvantage: Success

It may sound contradictory, but the success of the last few years has had a twofold negative effect on the firm. The success has hidden some of the defects and the success has kept management and senior staff too busy to take the time to analyze and correct the defects.

8.12 Disadvantage: The Firm's Name

Civic (Civic Consulting Group Ltd.) in Surrey, Civic Consultants Ltd. in Clearbrook and Chilliwack, and Civic Engineering Ltd. in Kamloops are all providing municipal engineering services. While there is no overlap with Civic Engineering, there is some overlap with Civic Consultants.

This creates some confusion with clients and approving authorities.

There is a suspicion that new clients may "accidentally" have gone to the other firm. There is also the concern that our marketing efforts will benefit the other firm while negative actions by the other firm may, by implication, also impact Civic.

9.0 Summary of Civic's Financial Performance

A summary of financial information for Civic for the fiscal years ending March 31, 1988 to 1992 are shown in Table 5.

Note: The information for 1992 is estimated based on interim financial statements.

9.1 Professional Fees and Fees per Staff

Professional firms sell time at an hourly rate. The measure for total sales is the volume of professional fees invoiced to the clients. Disbursements, while they are included in total income are a zero-sum item since they are also shown as an expense to the firm. Professional fees are therefore critical to the firm.

Professional fees have been rising yearly but leveled off in 1991 (Figure 2). In the current fiscal year fees are

CIVIC CONSULTING GROUP LTD.

Five Year Financial Information

Fiscal Year Ending March 31 of :

	1988	1989	1990	1991	1992 estimated
Income	\$112,469	\$471,980	\$824,215	\$974,324	\$1,277,407
Professional Fees	\$107,939	\$461,161	\$812,331	\$927,541	\$1,201,789
Net Income (NI)	\$2,155	\$59,515	\$125,542	\$118,589	\$125,984
Ave. # of staff	2	5	11	15	18
Prof. fees/staff	\$53,970	\$92,232	\$73,848	\$61,836	\$66,766
NI/staff	\$1,078	\$11,903	\$11,413	\$7,906	\$6,999
Investment	\$900	\$900	\$900	\$900	\$900
Retained Earnings Equity	(\$1,613) (\$713)	\$57,579 \$58,479	\$162,871 \$163,771	\$265,265 \$266,165	\$363,533 \$364,433
Shares issued	8100	8100	8100	8100	8100
Equity/share	(\$0.09)	\$7.22	\$20.22	\$32.86	\$44.99
Monetary current assets	\$2,818	\$3,437	\$17,288	\$22,038	\$11,453
Current assets	\$46,996	\$136,068	\$236,116	\$266,703	\$328,709
Current liabilities	\$52,094	\$86,558	\$131,716	\$58,249	\$64,582
Return on Sales	2.00%	12.91%	15.45%	12.79%	10.48%
Return on Equity	-302%	102%	77%	45%	35%
Quick test	0.05	0.04	0.13	0.38	0.18
Current ratio	0.90	1.57	1.79	4.58	5.09

Table 5 Five Year Financial Information

Professional Fees

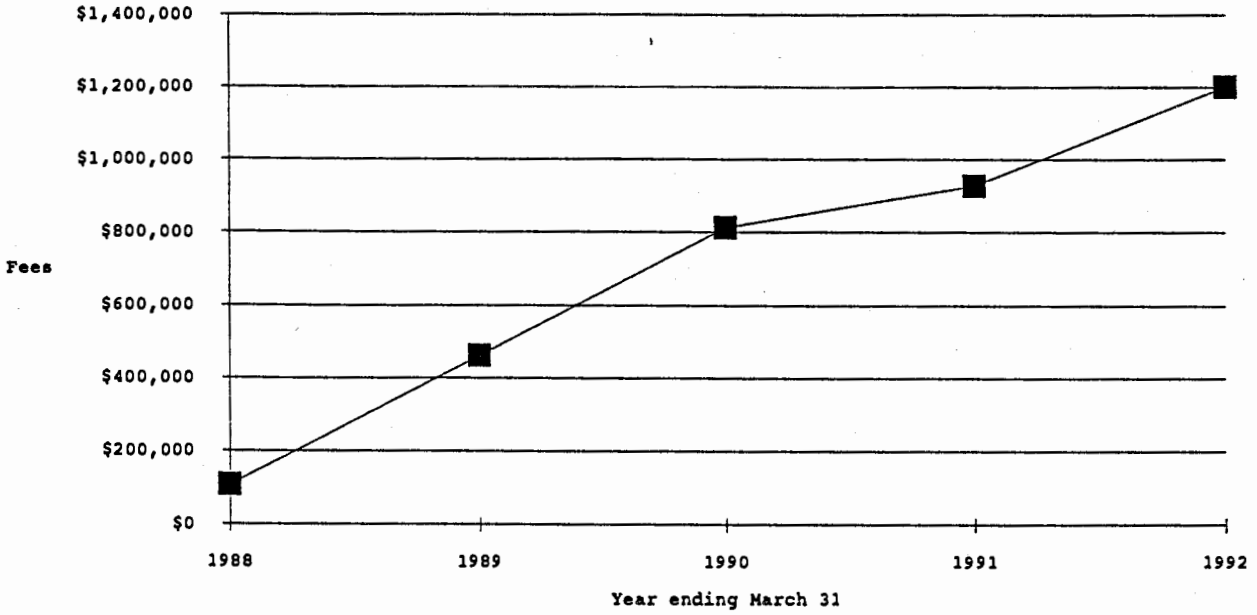


Figure 2 Professional Fees

Average Staff Levels

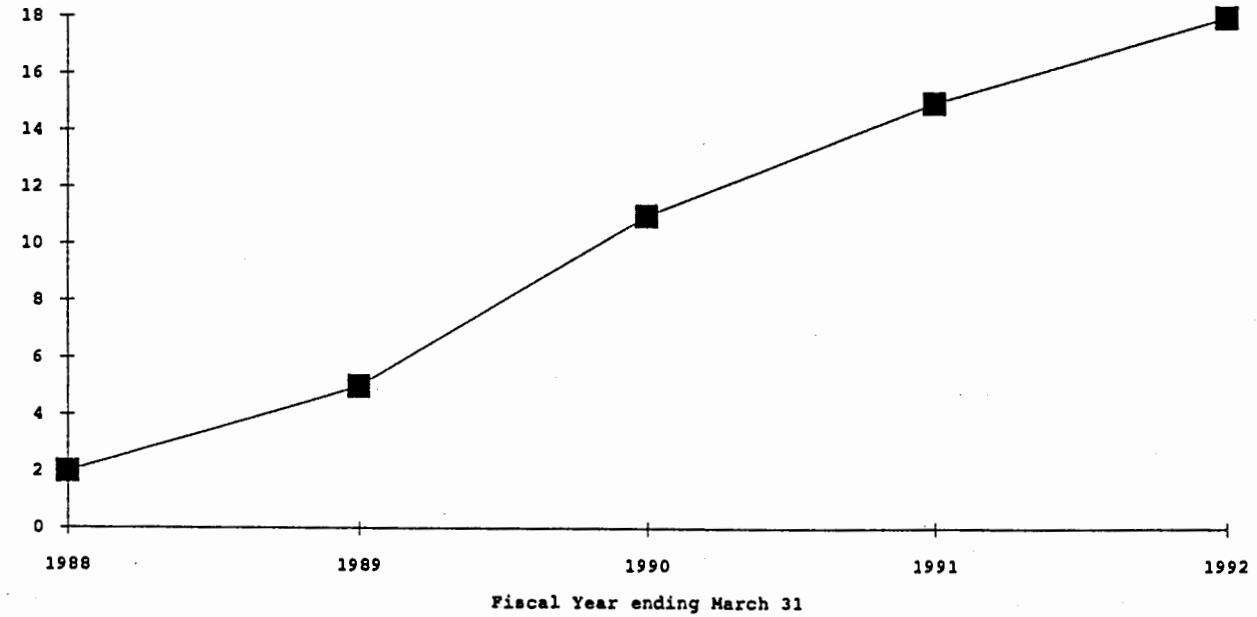


Figure 3 Average Staff Levels

increasing at the earlier rate again. The rising fees are a combination of higher hourly rates and increased volume brought on by increased levels of staff.

Yearly staff levels are presented graphically in Figure 3. It should be noted that this graph shows only averages, not the bulge in staff levels during the summer months nor the 30% increase in staff in late February and early March of 1992.

Another critical indicator is the professional fees per staff ratio since this allows a year-to-year performance comparison. The graph shown in Figure 4 indicates that this ratio dropped from 1989 to 1991 but increased slightly for

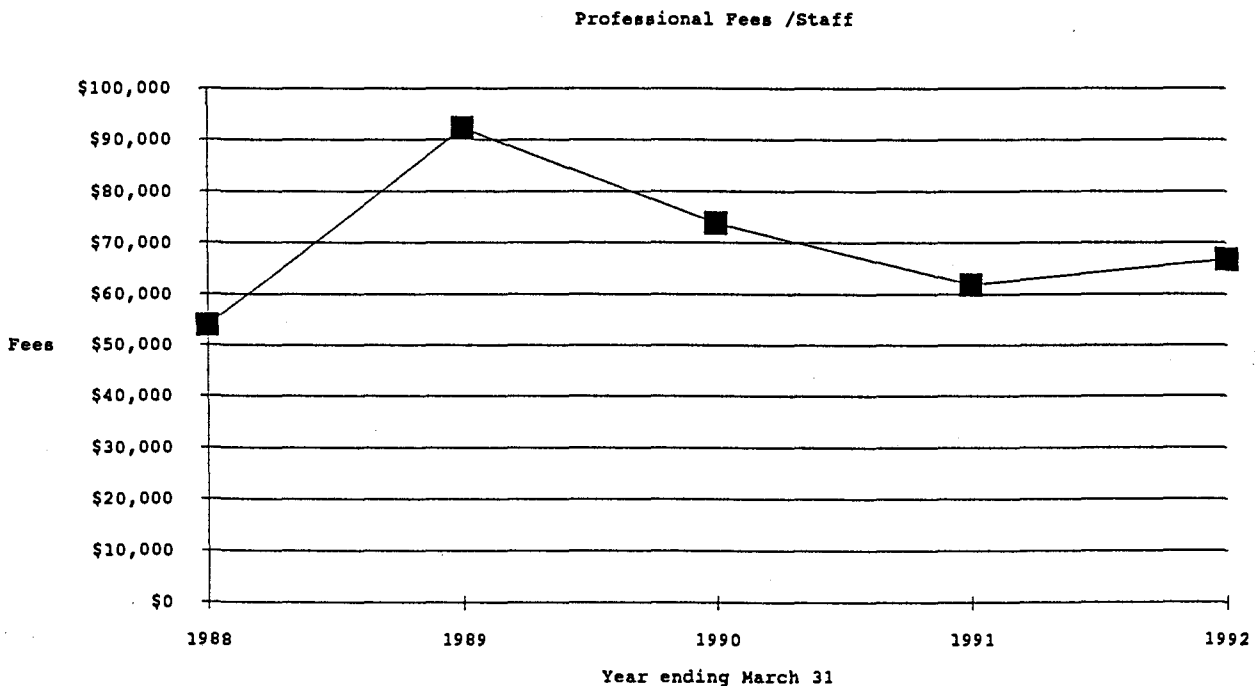


Figure 4 Professional Fees per Staff

the current fiscal year. There are several factors that influence this ratio:

- 1) Staff growth at the junior level will increase total fees less than the percentage increase in staff.
- 2) New staff has an initial low productivity period while they become accustomed to the procedures in the new firm.
- 3) An increase in inexperienced staff makes more time demands on senior staff. Excessive demand on senior staff due to an imbalance in staff experience levels results in a less than optimal learning curve for the junior staff and reduced productivity for the senior staff.
- 4) Most projects have fixed fee values based on a price negotiated with the client. The declining ratios may therefore indicate that some fees are negotiated too low for the work involved in the projects.
- 5) Staff selection may not be as good as initially believed.

9.2 Net Income and Net Income per Staff

Net income has remained virtually constant for the three fiscal years ending March 31, 1992, even though professional fees have continued to increase. This is graphically presented in Figure 5. The net income per staff ratio as shown in Figure 6 has declined in the last four years. The same five factors that influenced the ratio in Section 9.1 of this document are also applicable to this ratio.

Net Income

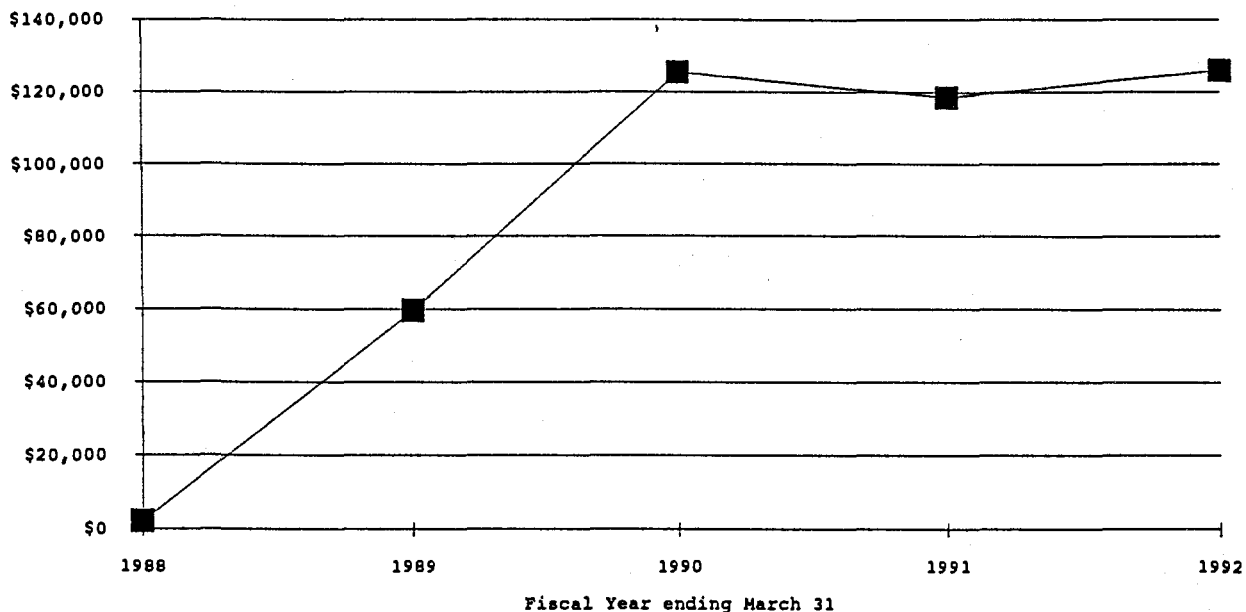


Figure 5 Net Income

Net Income per Staff

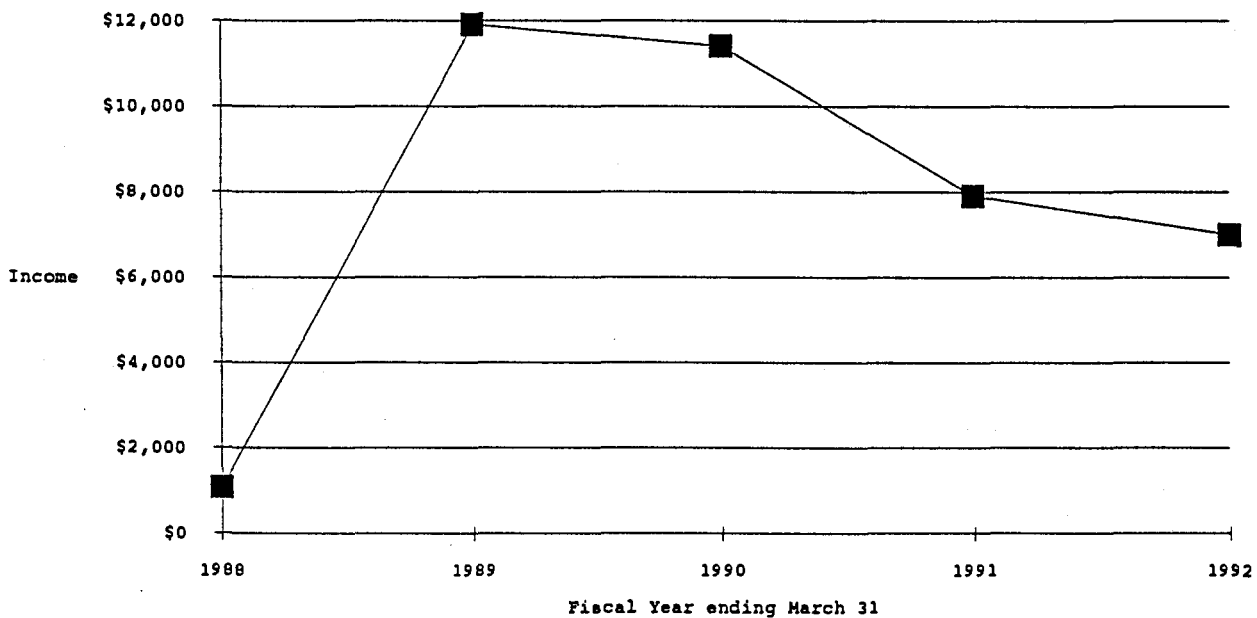


Figure 6 Net Income per Staff

9.3 Equity

Equity has increased at an annual rate of \$100 000 for the last three years or about \$12.35 per annum per share. The increase in equity is graphically presented in Figure 7 while the increase in equity per share is presented in Figure 8.

The actual share value will be determined by the firm's accountant following the March 31 year end. The value is based on a formula in the firm's shareholder agreement. It is estimated that the equity per share will be approximately 80% of the share value. This is extremely high for an established consulting firm and very high for a young firm. It reflects the conservative nature of the firm.

9.4 Common Financial Ratios

Several common ratios were analyzed to get a different overview of the performance of the firm. Return on investment (ROI) is not included, since it is a meaningless indicator in Civic's case. The firm was started with a \$900 investment and a shareholder loan. The investment has remained at \$900.

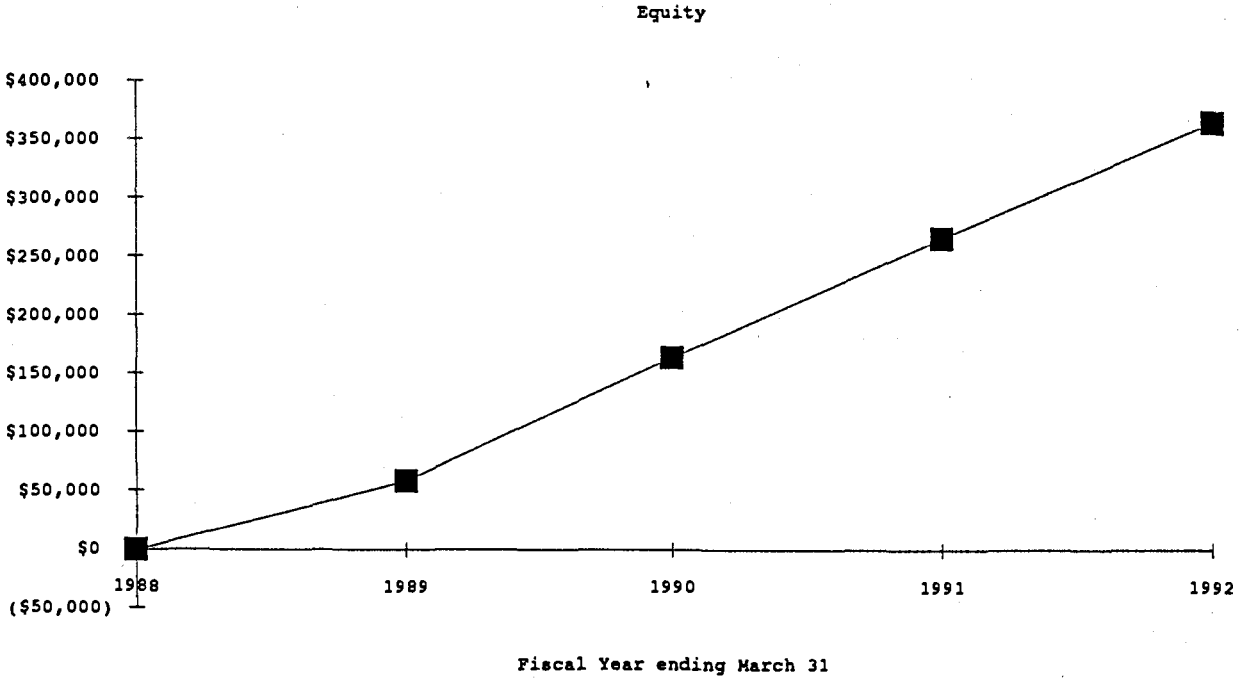


Figure 7 Equity

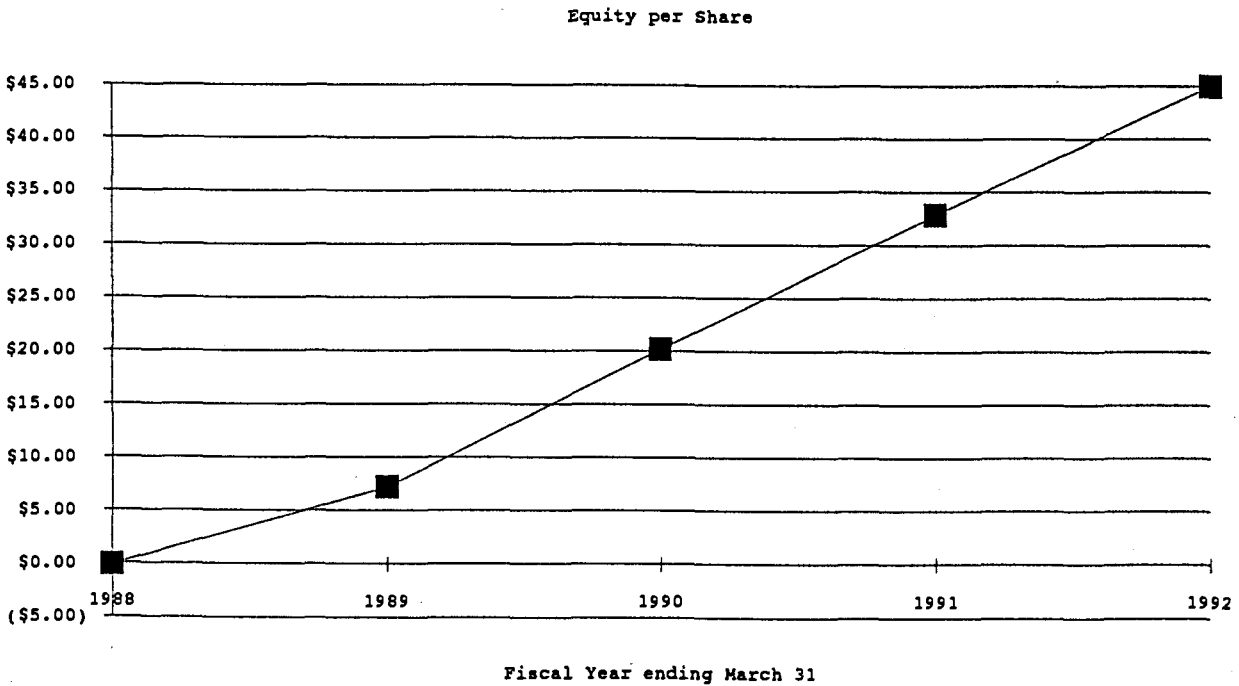


Figure 8 Equity per Share

9.4.1 Return on Equity

Return on equity (ROE) is dropping but it is still high at 35% for 1992. The line graph in Figure 9 shows that the drop is starting to level off. Two major items of information come from this ratio: net income is decreasing in relation to equity or equity is too high for the income generated. In general, even an increase in income will produce a decreasing ROE if equity increases quickly through retention of nearly all net income.

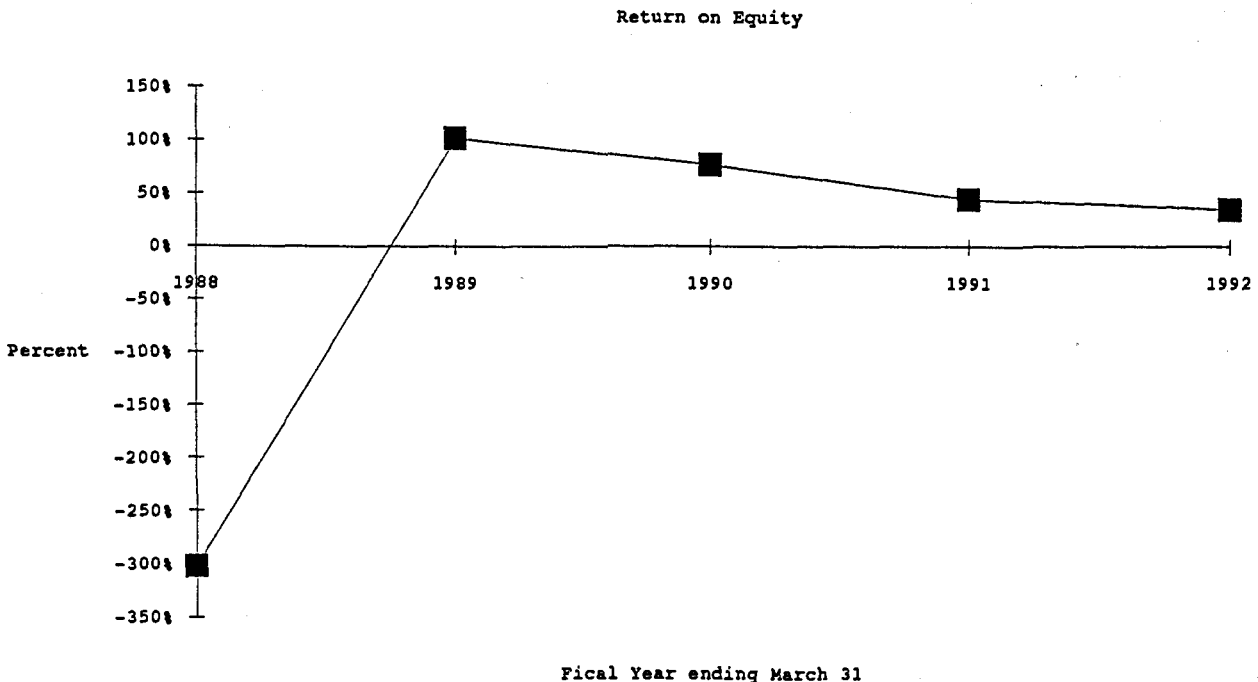


Figure 9 Return on Equity

9.4.2 Return on Sales

Return on sales (ROS) in this document is defined as return on professional fees invoiced. ROS is graphically presented in Figure 10. This graph reflects that total professional

Return on Professional Fees

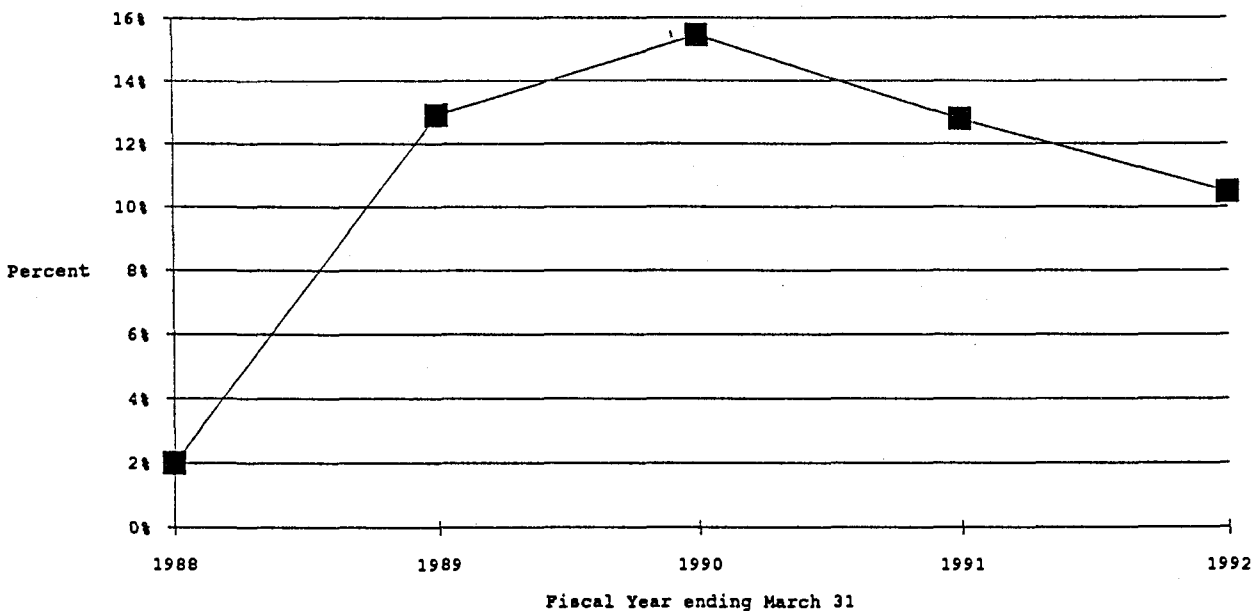


Figure 10 Return on Professional Fees

Quick Test Ratio

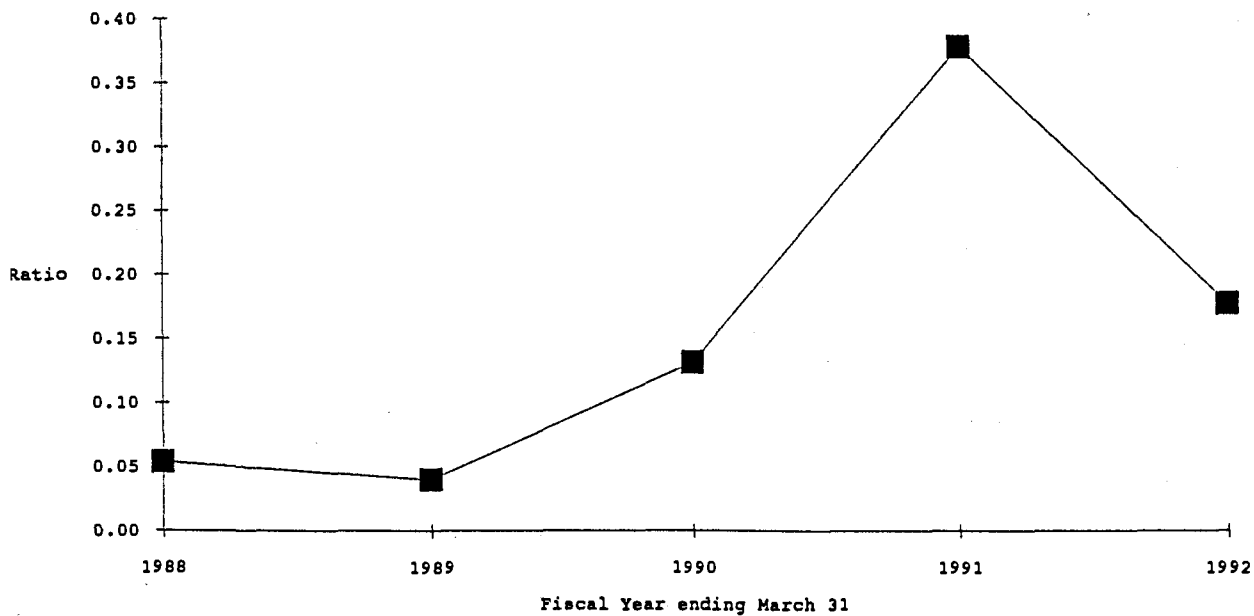


Figure 11 Quick Test Ratio

fees have increased but net income has remained constant. The explanation for this decline can be found in the five influencing factors listed in Section 9.1.

9.4.3 Quick Test Ratio

The quick test ratio (the ratio of monetary assets to current liabilities) shown graphically in Figure 11 is low but this is a reflection of the firm's policy to pay down its capital credit line and to operate as much as possible on cash flow without going into its operating credit line.

9.4.4 Current Ratio

The current ratio (the ratio of current assets to current liabilities), which is graphically presented in Figure 12, is high and continues to increase. This is a reflection of the current liabilities remaining constant and the current assets rising.

It should be noted that a large portion of the current assets consists of fees receivable and represents the equivalent of three months of fees. It should further be noted that the fiscal year end and the invoices for March will both be dated March 31, but in reality the invoices for March will be mailed in mid-April. In spite of the above note, faster collection of receivable will improve the ratio.

Current Ratio

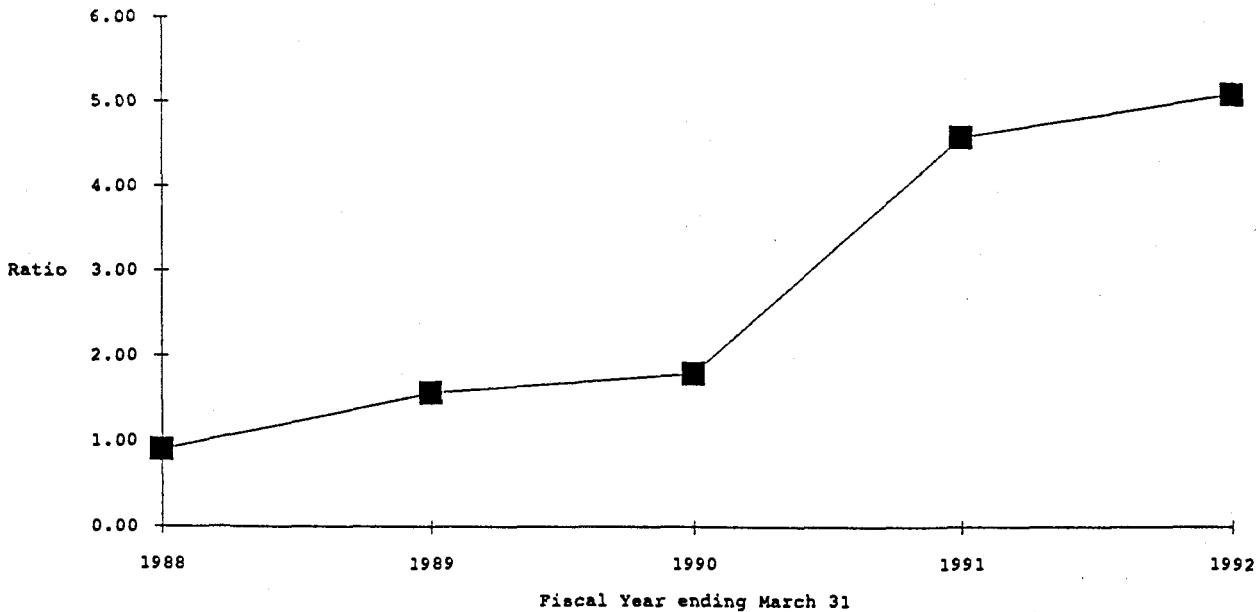


Figure 12 Current Ratio

9.5 Cash Flow and Lines of Credit

The firm has separate lines of credit for capital acquisitions and for operations. Some use has been made of the capital line of credit. Operations are generally financed through cash flow with a small positive bank balance and very little use of the operational line of credit.

The operational line of credit has generally been used when there was a rapid increases in staff levels. It has smoothed the two month gap between immediate cost increases (wages) and the increased cash flow from collection of fees generated by the new staff.

The operational line of credit is equal to approximately one month of expenses. The current rapid increase in staff will likely require the firm to make use of its operating line for the spring of 1992. A realistic line of credit for a growing firm is equal to two months of expenses in order to provide an operational buffer.

10.0 The Consulting Engineering Industry in BC

The consulting engineering industry in BC consists of over 200 firms varying in size from large resource based firms with over 800 employees to one-man operations.

The Consulting Engineers of BC (CEBC) estimates that their 105 member firms constitute approximately 50% of the total firms and 90% to 95% of the staff in the consulting business in BC. The membership includes virtually all large, most medium and the larger of the small firms.

The Federal Department of Industry, Science and Technology (ISTC) estimates that the industry in BC provided 18% of the establishments, 16% of the employment and 14% of the billings in Canada (see Table 6). At the same, time three of the nine largest firms in Canada are headquartered in Vancouver. These statistics provide some insight into the size of firms and the competitiveness in the BC market.

	Atlantic	Quebec	Ontario	Prairies	BC
Firms	6	14	33	29	18
Staff	4	31	33	16	16
Fees	4	30	37	15	14

Numbers represent percentage of total in Canada

Source: ISTC (1991)

Table 6 Regional Distribution - 1988

10.1 Size of Firm

The CEBC information indicates that about half of the firms in BC could be considered as small or even as one-man operations.

The ISTC information indicates that the average BC firm is smaller than anywhere in Canada except for the Prairies. It also indicates that in BC the billings on a per staff basis are by far the lowest in the country.

10.2 Competition

Both the CEBC and the ISTC information confirm that the industry has some large firms and a very large number of small firms. Competition is intense which is reflected in the low billings per staff. The profit picture is further

compromised when one considers that BC has generally higher than average wages.

10.3 Municipal Engineering

The most competitive engineering discipline seems to be structural engineering (Closkey, 1988), and the second most competitive discipline is municipal engineering. Like structural engineering, it also has a large number of firms and a large number of clients. At the small project-small firm level the market structure approaches perfect competition with a large number of buyers and sellers. The service takes on the appearance of a standardized commodity. As the project size increases, fewer sellers offer their service to a smaller number of buyers. Service becomes differentiated and price moves up.

11.0 Threats and Opportunities

The industry in general and Civic in particular face many threats and some opportunities.

11.1 Threats from Buyers

A large number of buyers, especially those with small projects, see the service as a commodity to be purchased at the lowest price. This will continue to provide a threat to the firm's profitability.

There was a trend a few years ago for municipalities to purchase consulting services on the basis of price only. Fortunately, this was a bad experience for them. They are now generally evaluating proposals largely on merit with price as only one of the decision components. The threat here is that it will be easy for them to revert back to a price-only criterion.

11.2 Threats from Entrants

Civic is threatened by entrants at three levels: shifts in large firms, OMOs resulting from layoffs in large firms, and expansion of current minor competitors.

11.2.1 Shifts in Large Firms

A number of large firms concentrated their efforts in the last ten years on the lucrative MOTH market and reduced their general municipal component to a token level. The reduction in MOTH work due to the change in government has resulted in some lay-offs. The anticipated further reduction in MOTH work could result in further lay-offs and in a shift by the firms to general municipal work.

The threat here is that those firms will deliberately underbid the competition to cover variable costs only. There is also a fear that the firms will further unintentionally underbid the competition since they are not aware of the

changes (and the resultant costs) which have occurred in the municipal approval process in the last few years.

11.2.2 Start-up Firms

Many of the small firms today were started by people laid off during the industry downsizing in 1981/82. The resultant price cutting proved fatal to several firms by the mid-1980s. The threat here is that the layoffs by the large firms could start up many new firms and another round of price cuts.

11.2.3 Expansion of Existing Firms

Civic faces potential competition from existing firms in the Interior and from outside BC which may be expanding into the local market. In particular, two firms have the potential to become competitors.

Duncan and Associates Ltd. (Duncan) of Surrey, Nanaimo and Victoria was recently purchased by IDE Engineering Ltd. (IDE) of Winnipeg. IDE is an aggressive firm and they saw the opportunity to purchase a low performing but essentially sound firm to enter the BC market. Civic has not considered Duncan a competitor in the past, even though they offer municipal engineering services from their Surrey office.

Urban Systems Ltd. of Kamloops, Kelowna, Prince George and Calgary opened an office in Richmond in 1990. They have so far concentrated on the Richmond market.

The threat here is that both of these firms are aggressive and have the potential to become major competitors in Civic's area of operations.

11.3 Threats from Government Action

Government action represents mostly an indirect threat not a direct threat to Civic.

11.3.1 Supply of Graduate Engineers and Technologists

The low emphasis in schools on mathematics and science courses is already affecting the number of potential entrants into engineering and technology schools. The proposed change of the engineer-in-training period from two to four years, combined with the low engineering salaries compared to some other professions, will further deter students from entering engineering schools. The long term threat is a shortage of engineers and technologists.

11.3.2 MOTH Budget Reductions

The expected reduction in capital works projects will affect Civic only indirectly as outlined in Section 11.2.1 and Section 11.2.2. This government action could have a long term effect on prices.

11.3.3 Public Perception of Government Action

There is the threat that the new government will do more work in-house. Staff increases in the affected government departments will be required which is contrary to the government's pronouncements of budget restraint. This may therefore be an idle threat. There is, however, the real thread of the deficit budget and its implications on capital spending. In particular, the MOTH budget was cut 15% from its 1991 level. This cut is expected to be reflected mainly in capital spending.

11.4 Opportunities Through Expansion

Opportunities in expansion exist in two areas: geographic expansion and expansion of services.

11.4.1 Geographic Expansion

There is rapid growth expected on both sides of the Fraser River up to the Chilliwack/Aggasiz area and in several interior towns. These are opportunities which can be investigated. Firms in the Prairies and in Eastern Canada are downsizing so opportunities in those areas seem to be limited. Expansion overseas can be considered on a project basis as a joint venture with other local firms.

11.4.2 Expansion of Services

There are opportunities to expand the existing basket of services to include legal survey, landscaping, physical planning plus more specialized niche services in transportation, no-cut sewer rehabilitation, road rehabilitation, pump stations and other municipal engineering fields.

12.0 Strategies of the Main Competitors

Many firms in the industry, especially the small firms, do not seem to consciously follow a strategy but instead react to the market. This applies somewhat to the firms that Civic considers its main competitors.

12.1 Coastland's Strategy

There is no evidence of conscious adherence to any strategy although their apparent strategy was to remain small, take on small and medium-sized projects, price competitively, and provide tight control through the work of the two principals. Their plans for 1992 change one aspect of this strategy: they are planning to expand their staff to reduce the work load of the principals.

12.2 IMC's Strategy

IMC is part of the Stanley Group of Companies. It provides municipal engineering services to the private sector only

while another subsidiary of the group provides services to the public sector. Until mid-1991 there seemed to be no strategy in respect to clients or projects, except for the restriction to private sector work.

IMC experienced some losses due to poor client selection and personnel problems. As a result, the firm downsized in 1991 to correct the personnel problem and became more selective in its choice of clients and projects. They also introduced a restrictive retainer policy. They expect to continue following these policies.

Their pricing has been somewhat erratic in the past although they claim to follow a policy of near-premium pricing. Adherence to the new policies should stabilize their pricing at average or higher.

12.3 Hunter Laird's Strategy

Hunter Laird's strategy has been to provide a high volume of basic design at very competitive prices. To achieve this goal they often found themselves at odds with the approval authorities. They were known as a "developer's consultant".

There are indications that there is a change in strategy. They want to become more "mainstream". To date there is no evidence that their pricing has changed to reflect the new strategy.

12.4 Aplin and Martin's Strategy

A&M has had a policy for some years of providing a highly professional service to large private clients and municipalities at premium prices. The service to municipalities concentrated on transportation. At the same time they continued to take on small and medium-sized private works.

The addition of Surrey's former Municipal Manager as a principal of the firm should result in some strategic changes. Some of the expected changes are:

- elimination of all small projects
- promotion to public institutions such as universities
- greater promotion to major private clients
- greater promotion to municipalities
- diversify into other disciplines

12.5 McElhanney's Strategy

McElhanney's strategy in the last ten years has been to shift from general municipal engineering to concentrate on MOTH work plus a select number of development and public works projects. They eliminated small projects by deliberate high pricing.

Their strategy is expected to remain unchanged for the next year (since the provincial budget funded their MOTH projects) with a gradual shift to a broader client base.

13.0 Trends and Changes in Municipal Engineering Consulting

13.1 Economic Impact

The general economy in Canada is still in a recession or the very early stages of a recovery. Consulting firms in Eastern Canada are continuing to downsize. The outlook is for a slow recovery.

BC is faring somewhat better than the rest of the country. Continued immigration from the Pacific Rim and repatriation of British Columbians from Eastern Canada is providing the housing industry with a steady demand for its product. The drop in interest rates and the recent federal changes to financing of house down-payments will further increase the demand. This trend is expected to continue in the near future. A large part of Civic's work relates to housing and land development and therefore this trend has positive implications for Civic and its clients.

The world economy has slowed and international competition has increased. Some changes in the world scene will

positively impact the general economy of Canada and BC, and this will indirectly affect Civic.

Some of the changes are:

- 1) The Organization of Petroleum Exporting Countries (OPEC) is seriously attempting to stabilize production and increase world prices for crude oil. This should stimulate the recovery in Alberta.
- 2) US housing starts are up this year. This will stimulate the lumber industry in Canada.
- 3) Demand for pulp and newsprint is increasing.
- 4) The world economy is slow but the newly emerging economic powers in South East Asia require foreign consulting services to bring their infrastructure in line with their industrial growth. Demand for consultants experienced in transportation, sewage and water is great in Malaysia, Singapore and Thailand.

13.2 Aging Infrastructure and Growth

The population pressure will continue to move development into the suburbs. At the same time, some existing infrastructure is nearing the end of its life cycle and approaching its capacity limit. Both trends indicate continued, even increased, work for municipal consultants.

13.3 Technology Changes

The industry is changing rapidly from manual to automated (computer) work stations. Firms have only partially completed the process of installing a DOS environment while the long range trend is to OS/2 and WINDOW NT platforms.

Office automation at Civic is at about the 40% level in respect to equipment. Training is at about the 30% level. A comprehensive information technology plan will have to be developed to ensure that training and equipment acquisitions are matched and that the equipment is suitable for a future change in platforms.

13.4 Expected Changes

It is expected that land development (residential, industrial and commercial) will increase in the next year. Work from municipalities is expected to remain constant or increase slightly. MOTH work is expected to decrease in the order of 30% due to budget cuts and some funding shifts from new roads to rehabilitation of the existing infrastructure.

14.0 Assessment of Civic's Current and Future Performance

This section will attempt to assess:

- the current performance of the firm
- the effect of environmental changes on the firm
- the future performance based on current strategies

- the need for new strategies
- the potential strategic direction and the solution analysis method

14.1 Current Performance of Civic

Net income has remained constant for the last three years and some indicators such as net income per staff have dropped. Net income per staff is also below that of older firms. This is in part due to a higher percentage of junior staff at Civic when compared to the older firms.

Share value has increased dramatically. Dividends paid out have been low and this has resulted in a rapid increase in retained earnings. A high level of retained earnings is seen as very positive by the bank to support the credit line. Overall the performance of the firm has been good for a start-up firm but there is room for improvement.

14.2 Environmental Effects

The firm's environment will be greatly affected by the new government's provincial budget. Cut-backs for capital works in the MOTH budget will directly affect some of Civic's competitors, which will refocus them into greater competition for the remaining private and public works.

Early indications are that the budget will cut MOTH capital works 30%, which is not as severe as many expected. Current

high priority projects will continue to receive funding, but more funds will be shifted to rehabilitation projects. The impact on the consultants is not severe in the short term.

Based on the above scenario, the impact of the environment on the firm is generally positive:

- private works are expected to increase
- competition in the general municipal field from consultants heavily into MOTH work will increase moderately
- the municipal work load will remain constant in the short term and increase in the long term
- the worst impact of the recession is in the past

14.3 Future Performance With Current Strategies

Future performance, based on current strategies, will improve over current performance. The productivity of the junior staff will increase as they mature. Senior staff time will be freed up from training for work which generates fees directly. The low productivity from staff switching from manual to CADD work will disappear as they become proficient on the computers.

The productivity gains will not be available for the next six to twelve months before everyone is fully productive. The CADD training will continue until the fall and productivity will continue to be low until the end of the

year. Productivity gains will become general by January 1993. In financial terms, the total income for the fiscal year ending March 31, 1993 will be in the order of \$1.7 million while performance for the year on a per staff basis will improve only slightly. Productivity gains in the order of 15% can be expected the following year, if staff level and technology remain stable.

14.4 The Need for New Strategies

Productivity gains should make the firm more profitable starting in 1993. However, in the meantime the firm must consider new strategies and reconsider existing strategies. The existing strategy will continue to bring growth but the growth rate will decline as the firm comes closer to the "glass ceiling" in market penetration. Continued growth will have to be found in other markets.

14.5 New Strategic Directions

Some possible components of a new strategy are:

- 1) Limit or stop growth
- 2) Continue growth:
 - diversify into other fields such as structural engineering, landscaping, physical planning, etc.
 - expand horizontally by servicing a larger geographic market from the current office
 - expand horizontally by opening new offices

- aggressively expand market share in the current geographic market
- expand into niche markets such as pump stations or parks work

3) Increase profitability through changes in internal operations

14.6 Strategic Analysis Methods

It is desirable to evaluate all strategies on a net present value (NPV) basis. Realistically, a NPV cannot be determined for most strategies. Strategies must therefore be evaluated for such features as risk, return on investment or divergence from the core business by descriptors.

15.0 Strategic Alternatives

Section 14.0 indicates that there are three strategic directions which the firm can follow:

- 1) Stop growth but change the method of providing the products and modify the market segments to become more profitable.
- 2) Continue growing by expanding the product lines and the market.
- 3) Increase profitability through changes in the internal operations.

In addition, the firm can consider non-strategic yet critical moves, such as changing its name.

15.1 Zero Growth Alternative

One of Civic's strategies has been controlled growth. The strategy is not specific on growth rate and therefore a zero growth rate can be considered a sub set of controlled growth. The status quo at a zero growth rate can be considered one alternative. The profitability of this alternative can be increased by:

- a change in the client mix
- a change in pricing
- changes in the internal operation to make staff more productive.

15.2 Controlled Positive Growth Alternatives

Several alternatives exist which will provide a positive growth rate to the firm. All alternatives are independent of each other, but none of the alternatives are mutually exclusive.

15.2.1 Increased Promotion in the Current Geographic Market

Increase market share in the current geographic market by promoting aggressively to private developers, municipalities and MOTH. Start promoting to other provincial ministries, federal departments, public utilities, and other public agencies. A partial list of potential clients is included in

Appendix B. Essentially, this is also a status quo alternative but with a positive growth rate.

15.2.2 Expand into Municipal Niche Markets

Several niche markets exist where the firm already has experience or will be able to add experience. These niche markets are:

- sewage pump stations and force mains
- road rehabilitation
- no-cut sewer rehabilitation

These services can be promoted in a larger geographic market. This alternative builds on the status quo by increasing the geographic markets for niche services without straying from the core business.

15.2.3 Adding Non-Municipal Engineering Products

Diversification into non-municipal engineering services can include structural and electrical in the engineering field. It can include landscape architecture, building architecture, physical planning, and legal survey in the non-engineering field. All of these services relate in some way to the core business of the firm. These services are currently provided by sub-consultants.

A landscape architect who is also a physical planner fits well with the increased opportunities from municipal park departments and from large projects. This will be complementary to the core business. Legal survey and structural and electrical engineering services are readily available from sub-consultants. To bring these services in-house will be a move away from the core business.

15.2.4 Geographic Market Expansion

Geographic market expansion can take three forms:

- expansion of the geographic market from the existing office.
- expansion of the geographic market by opening offices up the Fraser Valley, in the interior of B.C., or on Vancouver Island.
- expansion into overseas markets on a project basis as part of a consortium.

Expansion from the existing office has the lowest risk and requires the lowest capital investment. The risk and the investment increases through the opening of additional offices. Overseas work represents the highest risk and the largest investment, but also the potential for the greatest return.

15.3 Policy Changes

Policies or policy changes to increase profitability can be considered along with other growth alternatives or on their own. The policies or policy changes reconfirm the strategies noted in Section 7.0. In particular, the policies address:

- a change in client mix to eliminate unprofitable projects.
- a change in the internal operation (e.g. training) to make staff more productive.

Most of the changes do not require any capital investment. For example, the strategy outlined in Section 7.4 is for a high level of service at average to premium prices. This strategy is consistently violated when pricing small projects. The intent here is to have the project manager follow the strategy when pricing. The risk is that the firm may price itself out of the small project market. That will reflect positively on the income statement since the small projects generally represent losses.

15.4 Change the Firm's Name

The current confusion in the market about the identity of Civic can be corrected by changing the firm's name. The confusion will increase further if the firm opens offices in geographic markets served by Civic Consultants Ltd. and Civic Engineering Ltd.

A change in name may result in a short term lull in new work assignments until clients become used to the new name.

Timing of the name change should therefore correspond to a period with a secure high work load to minimize the effect of the lull. Civic's work load for the near future exceeds its capacity, therefore the timing is suitable for the name change.

15.5 Secure Reputation and Knowledge

In the past, the reputation of the firm rested mainly with the principals. Expertise rested with the principals and select staff members, i.e. at least two people possessed any given expertise. The reputation will come to include the senior staff as the firm grows. Knowledge and reputation are competitive advantages which must be secured.

People are mobile and take knowledge and reputation with them when they leave a firm. This is a problem common to all professional service firms (Grant, 1991). The firm has to try and vest the reputation with the firm, rather than with the staff. The firm also has to reduce the desire for expert staff to leave, while at the same time reducing the impact on the firm from such an event. The firm can attempt to achieve this in several ways:

- keep the principals involved in projects so that the reputation remains largely at that level. However,

principal involvement becomes more difficult as the firm grows

- provide an environment that makes the firm a desirable place to work, a place that other people wish to join, rather than a place that people wish to leave
- broaden the expertise base as the firm grows, i.e. ensure that at least two staff members possess any given expertise

16.0 Strategic Goals and Evaluation Criteria

The firm has several goals which can be used to evaluate the alternatives:

- to be profitable (short range)
- to increase profitability (long range)
- to increase market share
- to increase markets

The evaluation must also consider the impact on employees and the fit with the core business.

17.0 Description of the Strategic Choices

An evaluation of alternatives against the firm's goals and constraints is shown in a matrix format in Table 7. The

Strategic Alternatives

Goals, Impacts & Constraints Text	Zero Growth	Growth				Policy Changes	Name Change	Secure Reputation Knowledge
		Increase Promotion	Niche Markets	Add Products	Geographic Expansion			
Reference	15.1.	15.2.1	15.2.2	15.2.3	15.2.4	15.3.	15.4.	15.5.
Short Run Profitability	H	H	M	M	L	H	L	M
Long Run Profitability	M	H	H	M/H	M	H	M/H	H
Increase Market Share	L	M	M	M	M	L	L/M	M
Increase Markets	L	L	M	M	H	L	M	M
Impact on Employees	L	L	L/M	M	H	L	L	L
Fit with Core Business	H	H	M/H	L-H	M	H	H	H
Diverse Client Base	L	M	M	H	H	M	L	L

Legend L=low
m=medium
h=high

Table 7 Evaluation of Strategic Alternatives

evaluation uses descriptors rather than dollar values since some comparisons can not be made in dollars (e.g. fit with core business). Other comparisons can only be stated in dollars if related to a specific scenario. Some alternatives, such as geographic expansion, have a multitude of scenarios and are therefore best evaluated by descriptors.

Descriptors such as low/medium mean that the evaluation is partway between low and medium. A descriptor such as low-high means a range from low to high depending on the specific item (e.g. Kamloops or Haney) in the alternative.

17.1 Zero Growth

This alternative is essentially the status quo with a zero growth rate and adjustments internal to the firm to bring the actual operation in line with the strategies outlined in Section 7.0. This alternative is positive in the short term but limits the firm in the long term.

A zero growth rate contradicts the strategy in Section 7.8 if controlled growth is assumed to be a positive growth rate. Profitability increases in the short term. The core business remains unchanged.

17.2 Growth with Increased Promotion in the Current Geographic Market

This alternative is essentially the status quo with growth through increased promotion of clients in the current geographic market. It is an attempt to increase market share closer to the "glass ceiling". Increased profit is generated through increased volume. The core business remains unchanged.

17.3 Growth Through Niche Markets

This alternative increases profitability through the promotion of the firm's expertise in niche products to clients in niche markets. The promotion will be to clients in the current geographic market and in other parts of the Lower Mainland. Growth is therefore through increased market share as well as through an increase in market area. Markets for products like no-cut sewer rehabilitation are just starting to develop in BC. The core business of the firm remains unchanged.

17.4 Growth through Non-Municipal Engineering Products

This alternative proposes to increase profitability by increasing markets and market share by providing in-house certain services which are currently provided by sub-consultants. Some services, for example structural engineering, are very small components of the firm's overall work load. Bringing structural engineering in-house will

change the direction of the firm away from its core business.

A landscape architect/physical planner (Note: many landscape architects are also physical planners) will complement the core business. The firm already provides basic planning and minor landscape architecture as part of subdivisions and uses landscape architects and physical planning sub-consultants on major developments and park projects. A landscape architect/physical planner will combine the functions of the current in-house work and that of the sub-consultant.

A building architect represents a departure from the core business and a possible conflict with the firm's architect clients.

17.5 Growth Through Geographic Expansion

This alternative proposes to increase profit through expansion of the market, i.e. increased volume. The risk, the need for capital investment, and the potential return vary depending on the nature of the expansion. Expanding the geographic market from the existing office has a normal risk, a low capital need (i.e. only those needs associated with normal growth), and the potential for normal profits. On the other end of the spectrum, overseas projects are high risk and capital intensive, but have the potential for high

return. This type of project is best handled through a consortium with other local firms.

Expansion from the existing office has the best fit with the core business and the best risk-adjusted return.

17.6 Policy Changes

The policy changes are not so much a change in policy as a recognition that the firm often does not adhere to its stated strategies. The intent is to revisit the strategies and to bring the day to day operation of the firm in line with the strategies.

Alignment with strategies will result in a change in client mix, more realistic pricing of projects, and other operational procedures (example: quality control and project scheduling) which will reflect in increased profitability. This alternative can be applied whether the status quo is maintained or one or more of the other alternatives are adopted.

17.7 Name Change

A change in Civic's name is becoming increasingly important. The confusion among clients will only increase as the firm grows or its geographic market changes. The firm's confirmed workload for the next six months indicates that the timing for the name change is ideal. The short term loss can be

minimized by proper notice to all clients and prospective clients, approving authorities, trade associations, and BC Tel (white and yellow pages). It is important in the short term to link the existing and the new name. The benefits from the change will accrue in the long term.

17.8 Reputation and Knowledge

Securing the competitive advantage of reputation and knowledge with the firm gains in importance in direct relationship to the growth of the firm. To maintain the advantage will require a concerted effort to provide a productive work environment and a broader base for any given expertise. The work environment becomes especially critical during periods of rapid growth.

18.0 Recommendations

This section briefly outlines the reasons for recommending or rejecting each alternative.

Recommendation 1: Zero Growth - This alternative is rejected since it is seen to be contrary to the strategy of controlled growth.

Recommendation 2: Increased Promotion in the Current Geographic Market - The firm's market share is at 10% while the "glass ceiling" is at 20% to 25%. Growth will become

incrementally more difficult as the market share increases over 15%. The effort may not be worth the return past that point.

Recommendation 3: Niche Markets - Niche markets should be pursued in areas of the firm's expertise. Some markets, such as no-cut sewer rehabilitation, are in their infancy and therefore have tremendous growth potential.

Recommendation 4: Vertical Integration - The firm is not ready to become a multi-discipline firm. Only one component, the landscape architect/physical planner will supplement and expand the current in-house services successfully. This component should be pursued.

Recommendation 5: Geographic Market Area Expansion - Expansion of the geographic market from the current office should be pursued since it represents a normal risk for the core business. Overseas projects should only be pursued if the risk can be suitably diversified. Operating additional offices should only be pursued if specific opportunities present themselves.

Recommendation 6: Policy Changes - The operation of the firm should be brought in line with the firm's stated strategies.

Recommendation 7: Name Change - The firm's name should be changed while the workload is high. A lull in new assignments will be welcome at this time rather than be a cause for concern.

Recommendation 8: Reputation and Knowledge - The principals should follow a three-pronged approach:

- 1) Stay involved in projects as much as possible.
- 2) Ensure that the expertise base is broadened to include at least one more staff member for each expertise.
- 3) Ensure that the firm remains a desirable place to work for all staff.

19.0 Implementation

Implementation details will have to be established through discussion at a senior staff and directors' level. Noted below are some broad based items to be considered by the implementation task force. Stated in the order of the recommendations:

- 1: No implementation
- 2 and 3: Define the niche markets and the potential clients. Senior staff to promote to those clients.
- 4: Commence the search for an individual who is a professional landscape architect and a professional physical planner.

5: Define a geographic market which can be serviced from the existing office. Expand the promotional efforts to the increased area.

6: Match the daily operations to the strategies in Section 7.0, in particular consider the following:

- Client mix: eliminate or decrease unprofitable client types
- Pricing: possibly set minimum fee levels for small projects and develop a fee estimating guide for larger project
- Develop a comprehensive technology policy: do a study on office automation and information system needs; consider an executive information system (EIS) on a local area network (LAN)
- Develop a policy on staff training: possibly make training in line with job function a condition of employment; provide in-house training and continue to financially assist outside training
- Review the firm's credit line: change banks if necessary
- Establish dividend and retainer policies or statements
- Define "controlled growth" and the growth objectives for the five and ten year horizons
- Review quality control and project scheduling procedures

7: Solicit input from staff, family, friends, and possibly from a professional firm to develop a new name. Develop an implementation procedure to minimize any negative impacts. Implement as soon as possibly.

8: Principals to plan for a wider expertise base and a continued desirable work environment.

Appendix A Letter to Consultants

To: Jorgen Johansen, P.Eng.
Mike Helle, A.Sc.T.
Declan Rooney, P.Eng.
Rudy Triffo, P.Eng.
Chris Newcombe, P.Eng.

February 27/92

Re: Interview for MBA Project

Thank you for taking the time and allowing me to interview you. I further wish to thank everyone for being frank and open in our discussion. I learned a lot and hope you had the same benefit.

Several people asked that I share the information from the interviews with them. Although no one asked that their information be kept confidential, I thought it would be best if I restated the information in summary form.

Product-Market Mix

The categories were private works (individual or corporate clients) vs public works (municipalities, provincial agencies, etc.) with further break downs into sub categories. Analysis of the data for the six firms (five interviewed firms plus Civic) shows that the private component varies from 100% of total work for one firm (their sister firm does all the public work) to the other extreme of only 20% private work. The average is 2/3 private and 1/3 public work. Within the private component, single family developments constituted about 2/3, multi-family about 1/4,

industrial about 1/20, with commercial and miscellaneous the remainder.

On the public side the municipalities and MOTH make up the bulk of the work with only some work for other government departments.

Time - Fee - Bad Debt Mix

A review of the private sector client on the basis of type of project versus a) time spent per dollar of fee, b) dollars of fee per hour spent, and c) bad debt per dollar of fees resulted in the matrix shown below.

	Time Spent/ \$ of Fee	Fee Invoiced/ Hour of Lab.	Bad Debt/ \$ of Fees
Small Project Non-Repeat Cl	Highest	Lowest	Highest
Small Project Repeat Client	High	Low	Low to Medium
Med. Project	Medium	Medium	Low to Medium
Large Project	Lowest	Highest	Lowest

No one had percentages available to fill the matrix, but there was consensus that the small project, non-repeat client not only required the most time per dollar of fee but was also the greatest risk for non-payment. Some indicated that this type of client represented half to 2/3 of the bad

debt on their books - totally out of proportion when compared to the amount of fees invoiced. No one indicated that they were no longer accepting small project clients.

Fees Billed Per Staff

Fees billed per staff for the six firms varies from the mid 50's to over \$100,000 per staff member. A note of caution when looking at these figures:

- a) Billing practices differ: one firm may include sub-consultants in their billings, while another firm may have the client pay the sub-consultant directly. Another firm may provide the same services in-house
- b) The ratio of principals to total staff may also be an influence.

CEBC uses a figure of \$75,000/staff based on informal information available to them. Dun and Bradstreet statistics for some of the larger firms generate the same average. The average for this group is \$78,000 (or \$67,000 if the reported high figure is removed from the calculation).

Trends

Most people felt that the land development sector would increase in 1992, municipal work would hold steady or increase moderately, and MOTH work would decrease sharply. All expressed the feeling that their firm's growth related

directly to their market mix and the fortunes of that market sector. The average is an expected 10% increase in volume with one firm expecting a decrease, one expecting no change and the others expecting increases. Staff level increases/decreases were generally a straight line reflection of the increase/decrease in expected volume.

Policies

Most firms did not have policies on profit sharing, bonuses or dividends. Generally, these items were considered on an individual basis with deference to the financial situation, precedents, etc. Two firms had policies on profit sharing, bonuses and dividends which were based on placing staff into three or four categories which then received differential treatment under the policy. One bonus plan made allowance for negative bonuses. Both dividend plans seemed to disburse all funds not needed for commitments in the following year.

A policy on retainers was not in my list of questions, however, one person indicates that his firm had an interesting policy.

We all ask some clients for retainer on an ad hoc basis.

You may therefore be interested in the following policy:

- 1) Estimate the value of the total fee.
- 2) The retainer required is the lesser of 50% of the fee or \$8,000.00.

3) Work does not commence until the retainer has been received.

4) The retainer will be applied to the last invoice at the completion of the project with the balance refunded at that time.

5) Progress invoices are sent monthly. Work on the project stops if the progress invoice is not paid within 30 days.

Apparently this policy has led to some projects being lost (to the rest of us), but the remainder of the clients have been financially stable, thus reducing/eliminating bad debt.

I trust this has been of some help.

Bill Kruger, P.Eng.,

WBK/sb

Appendix B Partial List of Potential Clients

1) Promote to other municipalities in the Lower Mainland

2) Other provincial ministries and agencies

Parks, Lands and Housing

BC Transit

BC Ferries

Universities and Colleges

3) Federal departments and agencies

Indian and Northern Affairs

Indian Bands

Public Works

Airports

Harbours

4) Large Land Holders

CN Lands

Marathon Realty

McMillan Bloedel

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