For my parents

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CHAPTER I

THE CASE FOR IMPROVED CONTRACTOR REPORTING PRACTICES

1.1 INTRODUCTION

Over the last decade, considerable effort has been directed at developing management information systems for use in the methods of project procurement known as project management and construction management. These systems were developed for today's super-projects, such as nuclear power projects, pipeline projects, hydro-electric projects and so forth. Their sophistication is such that they are not readily applicable to the needs of the general contractor, whose annual volume is less than, say, $30 million. Yet, the percentage of contractors whose volume is less than or equal to $30 million per annum is in excess of 99 percent of the total number of incorporated firms in Canada. Little published work to date has been directed at adapting these information systems to the specific needs of the medium-sized general contractor, or for that matter at identifying what these specific needs might be. It is this latter item which is addressed by this thesis. In particular, the need for collecting, analyzing and reporting information for use by the contractor's clients, bank and surety coupled with the implications of this need for the firm's management system is reported on in this thesis.

This chapter addresses itself to identifying:

(i) the objectives of an overall research program directed at developing improved management information systems for medium-sized contractors and the specific objectives of this thesis (Section 1.2);

(ii) the current status of management practices in the construction industry (Section 1.3);

(iii) the economic climate in which the contractor operates and its implications (Section 1.4);

(iv) the general characteristics of the medium-sized contractor (Section 1.5);

Finally, an overview of the thesis is presented in Section 1.6.

1.2 RESEARCH OBJECTIVES

The objectives of this thesis are derived from those pertaining to a larger research programme which has as its focus the development of improved management information systems for the general contractor, improved in the sense that they:

(i) optimize the use of information presently available to the firm;

(ii) are compatible with the manner in which the firm operates and with the skills of existing personnel;

(iii) report the correct and necessary information in a form which can best be interpreted by management and at a level of detail most appropriate for the individual

managers or supervisors who will be using this information;

(iv) get this information to the appropriate managers and supervisors both at the time required and the frequency required;

(v) enhance the relationship between the contractor and his banker, surety and clients.

The goal of this thesis is to assist in attaining objectives (i), (ii) and (v) above by:

(a) documenting the extent of the information presently collected and processed by the firm with respect to internal reporting and external reporting needs;

(b) documenting the flow of activities within the firm required for the preparation of internal and external reports;

(c) documenting the information requirements of the contractor's bank, surety and clients and the evaluation processes employed by these external parties; and

(d) assessing the strengths and weaknesses of present contractor reporting practices, as viewed by the bank, the surety and the contractor himself.

The methodology employed to achieve the thesis goal consisted of a combination of literature review and interviewing of contractors, banks and sureties. The major contribution of this thesis is seen to lie in the compilation of information attained through the interview process and which in large part is not available in the literature.

1.3 CURRENT STATUS OF MANAGEMENT PRACTICES

In a report prepared by Revay and Associates for the Canadian Construction Association in 1974 on the status of project planning and progress control practices in the Canadian construction industry [22], it was stated that it is very doubtful if 30 percent of all contractors maintain records meeting even the minimum requirements for proper planning and control. Several reasons may be cited for the existence of less than adequate reporting systems. Two important ones are:

(a) construction personnel tend to be action-oriented and are loath firstly to document the manner in which they will execute a job *a priori* and secondly to measure progress once construction begins, preferring to rely on their incurable optimism that everything will work out in the end;

(b) the economics of the industry preclude individual firms from undertaking the practical research required for the development of reporting systems tailored to their specific needs (Section 1.4).

It is the purpose of this section to examine briefly the status of management practices in the construction industry and the concomitant implications for those wishing to develop improved reporting practices for the industry.

An attempt was made in the Revay study [22] to have it as broad-based as possible, and thus emphasis was placed on obtaining as large a response as possible. Consequently a questionnaire was employed (394 responses out of 3,000 questionnaires) which was followed up by a limited number of interviews. The interview process indicated some of the weaknesses of a questionnaire format. Nevertheless, useful results were obtained and they are summarized in Table 1.1. (In terms of 1977 dollars, the three ranges of annual volume cited in Table 1.1 correspond roughly to $0 - $5 million, $5 - $17 million and greater than $17 million).

Examination of this table reveals the following:

(i) the degree of sophistication of the firm is proportional to its annual volume;

(ii) the CPM method does not enjoy high usage and hence the desirability of developing reporting systems that require the use of CPM must be carefully assessed;

(iii) updating of schedules, which is a prerequisite to proper forecasting and cashflow analysis and control appears to need more attention;

(iv) except for companies whose annual volume is in excess of $10 million, computer usage is very low and the desire to use computers is also low. It is interesting to note that this survey was undertaken (October 1972) prior to the extensive availability of mini-computers.

(v) the procedures used by the firm do not appear to be integrated, e.g., cost accounting and estimating, cost accounting and general accounting;

(vi) cashflow, as a basis for planning, scheduling and control, is not commonly used;

(vii) considerable differences in practices exist between the various types of contractors, in the areas of scheduling, cost accounting, computer usage and cash flow forecasting.

The interview process pointed up the weakness of the questionnaire process in that it afforded an opportunity to examine in detail the actual reporting practices of several contractors. This process led to the discovery that very few of the cost statements currently prepared by contractors are in sufficient detail to establish the current financial status of a project and even less contain an estimate of the cost to complete a project. The inadequacy of these statements stems from the fact that reliable daily records of both work performed and resources utilized are seldom, if ever,

available for a project in sufficient detail and with a reasonable level of accuracy.

This report stated that medium-sized contractors are in the greatest need of help, and identified a member of this group as having from $3 to $10 million dollars in annual sales ($5 to $17 million in 1977 dollars). (This definition of a medium-sized contractor has not been rigidly adhered to in this report. For example, the firm examined in Chapter 5 was considered to be a medium-sized contractor, albeit a large one, even though its annual volume is some 25 million dollars [1977]). The report went on to say:

> "It is not so much the lack of sophisticated reporting formats, or lack of highly educated head office people therefore which causes the existing shortfall. What is really pressing is the reliable daily resource allocation records coupled with corresponding quantity reports of work accomplished at least on a weekly basis. . .
>
> "It is nevertheless apparent from the survey that the majority of the contractors either have no system at all or employ techniques which meet partial prerequisites only."

The report concluded with the following research priorities:

(i) to develop suitable techniques for the information-collecting process;

(ii) to develop practical reports which provide only the required information to the various levels of management without forcing everybody in the chain of command

to look at pages and pages of information not readily useful to the performance of their duty; and

(iii) to develop practical computer programs for the various functions of the planning and control operations.

In summary, it would appear that the designers of improved reporting systems must weight very carefully their decisions regarding the use of computers, the use of the CPM method, the degree of integration of the various reporting functions and the level of information required for effective use of such systems.

1.4 SOME OBSERVATIONS ON THE ECONOMIC CLIMATE IN THE CONSTRUCTION INDUSTRY

The purpose of this section is to examine the economic climate in which the contractor operates by viewing some aggregate statistics describing the industry [14]. Examination of these statistics demonstrates why a contractor cannot afford not to adopt and use sound reporting systems on the one hand, but, on the other, why he cannot afford to do the practical research required to develop such systems which are tailored to his specific needs.

In Canada, in 1970, approximately 80,000 firms were engaged in some form of construction. 19,920 of these firms were incorporated and were responsible for some two-thirds of all construction put in place. 80 percent of these 19,920 firms

had net assets (original cost less depreciation or capital cost allowance) of less than 1/4 million dollars. These firms, however, were responsible for only 26.3 percent of the construction volume put in place. Tables 1.2 and 1.3, extracted from reference [14] summarize the distribution of incorporated construction firms by size group and the distribution of sales of incorporated forms, by size group, respectively. The types of construction firms comprising each of the four construction categories in these tables are described in reference [14].

The ease of entry to the industry permitted by low capital requirements creates an environment of intense competition which is heightened by the cyclical nature of the industry. This competition has led to such low profit margins that few firms have sufficient resources to undertake research directed at their own management needs. Despite the risky nature of construction, the number of incorporated firms continues to grow. Figure 1.1 depicts the growth of incorporated firms with time, the variation of average sales per corporation versus time and the variation of percent profit on total sales versus time. Over the 1953-70 period, the number of incorporated firms rose from 3,459 to 19,920, while corporate profits declined at an average annual rate of 3.5 percent. In 1970, over 7,800, or close to 40 percent of the incorporated firms, operated at a loss. The relatively low profit/sales ratios (Figure 1.1) experienced by construction

firms provide low margin for errors, unexpected developments or inadequate planning and control practices. In fact, they point up the need for careful and accurate estimating on the one hand and control of costs on the other.

As a partial demonstration of the need for effective reporting to external parties (and, consequently, the need for effective internal reporting), it is instructive to examine the balance sheet of the average construction firm and to compare it with other average firms, which in this case are manufacturing, wood industries and wholesale trade [14]. An average firm was established by taking the total figures for each industry from Corporation Financial Statistics and dividing them by the number of firms in that particular industry [14].

Table 1.4 shows the balance sheets of average firms in construction, manufacturing, wood industries and wholesale trade as well as percentage distributions of assets, liabilities and equity. Note that the average construction firm is the smallest of the four firms examined and that a much lower proportion of total assets are in the form of fixed assets in construction and wholesale trade than in manufacturing. The high proportion of total assets represented by accounts receivable and inventories suggests that the contractor effectively extends credit (acts as a banker) to the client while performing a job. This fact illustrates the need for the contractor to plan and control his cash flows carefully

and to develop and maintain a progress claim reporting system which will assist him in obtaining payments as quickly as possible from the client.

Of the four types of firms examined, liabilities are highest proportionally, and equity lowest, in the average construction firm. The largest liability shares in the construction firm are in the form of short-term loans and accounts payable. This observation reflects the fact that the contractor obtains much of his working capital requirements in the form of loans from the bank and from credit extended by his suppliers and sub-contractors. This need for the use of borrowed money again points up the need for careful planning and control of cash flow and for the preparation of reports for the bank regarding the firm's present financial status and progress on projects on hand. The ability of the contractor to minimize the need for borrowed money coupled with his ability to present his case in an accurate but favourable way to his bank enhances the potential of minimizing the spread between the loan rate and the prime rate and of obtaining working capital when and in the amounts required.

The balance sheet also indicates the degree of leverage (ratio of total liabilities to total equity) enjoyed by each of the four firms, with construction being the highest at 3.15, followed by the wood industry at 2.15, then by wholesale trade at 1.86 and finally manufacturing at 1.03.

The high degree of leverage in construction is of acute concern to both the contractor's bank and surety, and indicates the need for prudent management of the firms' finances. More detailed statistics pertaining to the financial performance of construction firms in Canada, both in aggregated and disaggregated form, may be found in reference [14].

1.5 SOME CHARACTERISTICS OF MEDIUM-SIZED GENERAL CONTRACTOR

During the 1960's and early '70's, various prescriptions for management information systems were developed and presented in the literature. Many of them were rejected by contractors because they required substantial changes in the way in which they conducted their business. For the design of a reporting system to be successful, successful in the sense that it is adopted and used, the system must reflect the manner in which the firm is organized both at head office and at the site, the qualifications of personnel and their duties and responsibilities with respect to internal and external reporting functions, the nature of the firm's workload, etc.

The development of detailed profiles of the various types and sizes of contractors existing today, in terms of the attributes briefly outlined above, is beyond the scope of this thesis. However, as the reporting needs of the medium-sized general contractor form the focus of this report, an attempt is made here to set forth at least some of the general characteristics of such a contractor. Chapter 5 deals with

the particular attributes of one of the firms contacted in the course of this study.

Clearly, no one profile describes all the firms which constitute a particlar class of contractor in terms of type of work and volume. However, it is important to identify those features of a firm which are common to all firms in a given class in order to design a basic reporting system which is applicable to their general needs and which, with minimal modification, can be adapted to the specific needs of an individual firm. Thus it is essential that future work be directed at documenting the manner in which contracting firms are structured and operate, the qualifications of personnel, etc. The following profile of the medium-sized general contractor is based on reference [22] and on interviews conducted with general contractors.

The typical medium-sized Canadian general contracting firm will have a permanent staff (head office and field supervisory) of 20 to 70 people. Its annual volume will be in the range of $5 to $17 million dollars (1977). It will have from 6 to 20 projects ongoing at any one time, which require a work force of some 50 to 200 men. These projects may range from $50 thousand to $10 million dollars in value and run from one month to 24 months in duration. The firm is most likely owned and probably founded by its principals, with the principals in many cases being members of the same family. The

firm is not generally associated with other companies, it is normally located in a major city and, in general, operates within the confines of one province. Depending on the capabilities of the firm's personnel and on its geographic locations, 50 to 95 percent of the work associated with a given project may be sub-contracted. In general, the capital invested in fixed assets and plant is low in relation to business volume, and, in most cases, firms tend to be undercapitalized.

Two primary goals motivate the contractor, these being the maximization of return on investment and the development of a reputation for timely completion of projects within budget. It was noted in several cases, however, that some contractors were not able to articulate specific objectives for their form nor did they have a specific strategy in mind to attain their objectives, once stated.

Figure 1.2 depicts an organizational structure which is representative of many medium-sized contractors [22]. In general, most of the contractor's employees have little or no formal academic training for their jobs. The president himself may have started as a field engineer, a contract-coordinator, a tradesman, an estimator or instrument man. If a firm has engineers on its staff, they will most likely be civil. They will usually have started with the firm as a field engineer, and with time will probably advance to project engineer, chief engineer or operations manager. Estimators are normally trained on the job and few are formally qualified as quantity

surveyors. With minor exceptions, the firm's accountant will start off as an office clerk, followed by some field accounting experience and then will join the head office staff. The exception to this route is the professional accountant (CA) who is the chief financial officer of the firm.

The success or failure of the firm's projects rests invariably with the firm's superintendents. Except in the case of large complex projects where the superintendent may be an engineer, most superintendants are former tradesmen who started as carpenters, labourers, plumbers, electricians, etc. Normally they have progressed through the ranks, first as a foreman, then general foreman and finally superintendent.

1.6 THESIS OVERVIEW

The remainder of this thesis is structured as follows. Chapter 2 examines, in general terms, the information needs of external parties such as the client, bank, surety, and so forth with respect to the contractor's operation as well as the firm's internal information needs for effective project and company control. An attempt is made to describe information by type (quantitative, non-quantitative, financial, non-financial, etc.) and, to a limited extent, how it may be evaluated. The main purpose of this chapter is to provide the

background material necessary for a complete understanding of subsequent chapters. Chapter 3 focuses on the relationship between the contractor and surety, and, in particular, on the assessment procedures used by the surety in determining whether or not a company should be bonded, its bonding capacity, etc. The purpose of this chapter is to provide a partial basis for determining what and, to a certain extent, how improvements should be made in the firm's management practices and strengths in general and in the present internal and external reporting practices of the contractor in particular. The focus and purpose of Chapter 4 are similar in nature to Chapter 3, but with attention directed this time at contractor relations with the bank. Chapter 5 presents a case study of a sophisticated medium-sized general contracting firm. The goals of this case study are two-fold, namely:

(i) documenting the manner of preparation and presentation of external reports for use by the client, the bank, the surety, and of internal reports for use in generating these external reports and for internal financial control;

(ii) presenting the company's assessment of the strengths and weaknesses of its existing information systems and determining how improvements might be made.

Finally, Chapter 6 contains the conclusions and recommendations of this thesis.

QUESTIONS & ANSWERS	CAT. I Miscell. 24 Returns %	CAT. II Trade Contractors 183 Returns %	CAT. III Heavy Cont. & Road Builders 29 Returns %	CAT. IV General Contractors 158 Returns %	TOTAL 394 Returns %	YEARLY VOLUME 0 - 3,000,000 228 Returns %	YEARLY VOLUME 3,000,000- 10,000,000 85 Returns %	YEARLY VOLUME 10,000,000 up 72 Returns %
A. LOCATION OF CONTRACTS								
5. What is the normal location of your contracts?								
a) Within the limits of your local municipality?	7	17	26	22	18	25	18	4
b) Within the limits of your province?	53	53	50	43	49	51	44	30
c) In more than one province?	40	30	24	35	33	24	38	66
B. SCHEDULING								
6. Do you prepare a schedule with your estimate?								
NO	-	27	12	4	16	22	8	4
YES - a) Using own staff	93	72	85	91	81	77	88	87
b) Using the assistance of a service bureau	7	1	3	5	3	-	4	9
c) Using bar charts (not based on CPM)	40	72	70	63	64	77	71	53
d) Using CPM	50	14	25	35	31	-	27	45
e) Using other methods	10	14	5	2	5	26	2	2
22. Do you use schedules during the work?								
YES - a) Bar Charts (not based on CPM)	50	45	72	58	54	49	66	48
b) CPM	28	16	22	35	27	16	28	44
c) Other types	17	13	6	3	8	10	5	7
NO	5	26	-	4	11	25	1	1
23. How often do you update your schedules?								
a) At regular intervals	79	60	59	54	58	52	61	68
b) Under special circumstances	21	33	41	46	39	41	39	32
c) Never	-	7	-	-	3	7	-	-
24. Is your schedule updating done:								
a) By your head office personnel?	60	69	55	60	63	71	56	52
b) By your job field personnel?	40	31	45	36	35	28	44	41
c) By an independent service bureau?	-	-	-	4	2	1	-	7

TABLE 1.1 CURRENT STATUS OF CONTRACTOR REPORTING PRACTICES [20]

QUESTIONS & ANSWERS	CAT. I, Miscell. 24 Returns %	CAT. II Trade Contractors 183 Returns %	CAT. III Heavy Cont. & Road Builders 29 Returns %	CAT. IV General Contractors 158 Returns %	TOTAL 394 Returns %	YEARLY VOLUME 0 - 3,000,000 228 Returns %	YEARLY VOLUME 3,000,000- 10,000,000 85 Returns %	YEARLY VOLUME 10,000,000 up 72 Returns %
C. COST KEEPING								
10. Is your cost accounting separate from your general accounting?								
YES	79	73	7[illegible]	59	67	67	68	67
NO	21	27	3[illegible]	41	33	33	32	33
11. Is your cost accounting system divided:								
a) Into unit activities?	58	66	75	54	61	63	58	63
b) Into locations?	21	20	25	25	23	22	25	19
c) Into trades?	21	14	-	21	16	15	17	18
12. Do you keep overhead costs separate?								
YES	93	82	97	91	87	80	95	100
NO	7	18	3	9	13	20	5	-
13. Do you keep equipment costs separate?								
YES	87	77	10[illegible]	85	83	77	91	89
NO	13	23	-	15	17	23	9	11
14. Is your labour cost and payroll:								
a) Combined?	33	44	4[illegible]	46	45	46	46	36
b) Separate?	67	56	5[illegible]	54	55	54	54	64
15. Do you prepare cost reports:								
a) Weekly?	18	20	2[illegible]	27	23	22	24	27
b) Every two weeks?	12	10	[illegible]	17	13	9	16	19
c) Monthly?	53	59	6[illegible]	48	54	57	53	48
d) Periodically?	17	11	[illegible]	8	10	13	7	6
16. Do you maintain your job costs:								
a) On the site?	14	6	3[illegible]	19	14	5	17	34
b) In the head office?	86	94	6[illegible]	81	86	95	83	66
17. Are the accounting items used in your costing:								
a) Identical to the items of your estimate?	33	36	4[illegible]	48	42	35	49	53
b) More detailed than the estimate?	33	40	2[illegible]	22	31	35	25	25
c) More general than the estimate?	34	24	3[illegible]	30	27	30	26	22

TABLE 1.1 (continued) CURRENT STATUS OF CONTRACTOR REPORTING PRACTICES [20

QUESTIONS & ANSWERS	CAT. I Miscell. 24 Returns %	CAT. II Trade Contractors 183 Returns %	CAT. III Heavy Cont. & Road Builders 29 Returns %	CAT. IV General Contractors 158 Returns %	TOTAL 394 Returns %	YEARLY VOLUME 0 - 1,000,000 228 Returns %	YEARLY VOLUME 3,000,000- 10,000,000 85 Returns %	YEARLY VOLUME 10,000,000 up 72 Returns %
D. COMPUTER USE								
27. Have you ever used computers for:								
a) Labour Payroll?								
Never	21	66	14	68	64	78	64	21
In past	-	11	12	7	9	9	8	8
At present	79	23	14	25	27	13	28	71
b) Cost accounting?								
Never	29	77	46	67	68	83	60	34
In past	7	3	12	8	6	4	6	12
At present	62	20	42	25	26	12	34	54
c) General accounting?								
Never	29	71	52	67	66	77	61	38
In past	-	5	9	6	6	6	5	6
At present	71	24	39	27	28	16	34	56
d) Cashflow forecasting?								
Never	50	93	94	98	94	96	95	86
In past	17	1	6	2	2	2	-	6
At present	33	6	-	-	4	3	5	8
e) Scheduling?								
Never	64	92	74	76	82	97	78	40
In past	-	3	22	13	9	3	17	20
At present	36	5	4	11	9	-	5	40
f) Estimating?								
Never	82	90	83	92	89	94	81	77
In past	-	3	25	3	4	2	10	7
At present	18	7	12	5	7	6	9	16
28. Do you have an in-house computer?	28	11	24	15	15	5	16	44
29. Do you use the services of a data processing bureau?								
YES	46	24	33	21	24	16	28	44
NO	54	76	67	79	76	84	72	56

TABLE 1.1 (continued) CURRENT STATUS OF CONTRACTOR REPORTING PRACTICES [20]

QUESTIONS & ANSWERS	CAT. I Miscell. 24 Returns %	CAT. II Trade Contractors 183 Returns %	CAT. III Heavy Cont. & Road Builders 29 Returns %	CAT. IV General Contractors 158 Returns %	TOTAL 394 Returns %	YEARLY VOLUME 0 - 3,000,000 228 Returns %	YEARLY VOLUME 3,000,000- 10,000,000 85 Returns %	YEARLY VOLUME 10,000,000 up 72 Returns %
D. COMPUTER USE (continued)								
30. Under what circumstances would you consider using a computer for:								
a) Labour Payroll?								
Never	17	52	22	43	44	60	20	25
Specific Circumstances	83	48	78	57	56	40	80	75
b) Cost Accounting?								
Never	17	56	28	46	48	67	22	24
Specific Circumstances	83	44	72	54	52	33	78	76
c) General Accounting?								
Never	33	52	24	48	47	66	18	24
Specific Circumstances	67	48	76	52	53	34	82	76
d) Cashflow Forecasting?								
Never	43	58	36	49	52	66	29	35
Specific Circumstances	57	42	64	51	48	34	71	65
e) Scheduling?								
Never	43	59	41	41	49	64	24	34
Specific Circumstances	57	41	59	59	51	36	76	66
f) Estimating?								
Never	50	58	47	48	52	66	35	33
Specific Circumstances	50	42	53	52	48	34	65	67

TABLE 1.1 (continued) CURRENT STATUS OF CONTRACTOR REPORTING PRACTICES [20]

QUESTIONS & ANSWERS	CAT. I Miscell. 24 Returns %	CAT. II Trade Contractors 183 Returns %	CAT. III Heavy Cont. & Road Builders 29 Returns %	CAT. IV General Contractors 158 Returns %	TOTAL 394 Returns %	YEARLY VOLUME 0 - 3,000,000 228 Returns %	YEARLY VOLUME 3,000,000- 10,000,000 85 Returns %	YEARLY VOLUME 10,000,000 up 72 Returns %
E. CASHFLOW FORECASTING								
7. Do you prepare a cashflow forecast with your estimate?								
YES	53	17	18	32	25	16	23	56
NO	47	83	82	68	75	84	77	44
8. Do you prepare a cashflow forecast after being awarded the contract?								
YES	69	39	43	62	50	39	54	81
NO	31	61	57	38	50	61	46	19
20. Do you maintain a cashflow forecast during the execution of the project								
YES a) At regular intervals	61	32	17	44	37	32	36	55
b) Under special circumstances	6	32	52	40	35	35	39	34
NO	33	36	31	16	28	33	25	11
F. PROGRESS REPORTING								
33. How often do you receive progress reports from your jobs?								
a) Weekly	50	60	65	68	63	65	65	59
b) Every two weeks	7	11	3	7	9	9	6	12
c) Monthly	32	22	23	20	22	19	22	26
d) Periodically	7	7	9	5	6	8	7	3

TABLE 1.1 (continued) CURRENT STATUS OF CONTRACTOR REPORTING PRACTICES [20]

	Size group (Millions of dollars of net assets)							
	Under 1/4	1/4-1	1-5	5-10	10-25	25-100	Over 100	Total
	(Per cent)							
1968								
Building	75.7	18.9	4.6	0.4	0.3	0.2	*	100.0
Highway, bridge, and street	51.5	34.6	11.4	1.6	0.7	0.2	*	100.0
Other	57.5	29.9	9.7	1.0	1.1	0.6	0.2	100.0
Special trade	87.0	11.4	1.5		0.1	*	*	100.0
Total	79.9	16.0	3.4	0.3	0.2	0.1	†	100.0
1969								
Building	73.9	19.8	5.2	0.5	0.4	0.2	*	100.0
Highway, bridge, and street	53.5	33.0	11.0	1.4	0.9	0.2	*	100.0
Other	56.9	30.6	8.7	1.3	1.3	1.0	0.1	100.0
Special trade	88.6	9.7	1.5	0.1	0.1	*	*	100.0
Total	80.2	15.4	3.6	0.3	0.3	0.1	†	100.0
1970								
Building	74.5	19.3	4.9	0.6	0.4	0.2	*	100.0
Highway, bridge, and street	55.8	30.7	11.3	1.3	0.8	0.1	*	100.0
Other	55.9	30.0	10.6	0.7	1.9	0.7	0.1	100.0
Special trade	88.2	10.0	1.6	0.1	0.1	*	*	100.0
Total	80.2	15.3	3.7	0.4	0.3	0.1	†	100.0

* No firms reported.
† Insignificant.
Note: Because of rounding, totals may not correspond to component data.
Source: Based on data from Statistics Canada.

TABLE 1.2 DISTRIBUTION OF INCORPORATED CONSTRUCTION FIRMS, BY SIZE GROUP, 1968-70 [14]

	Size group (Millions of dollars of net assets)							
	Under 1/4	1/4-1	1-5	5-10	10-25	25-100	Over 100	Total
1968								
Building	24.8	28.6	25.1	5.0	9.3	7.2	*	100.0
Highway, bridge, and street	8.0	27.1	32.2	12.5	13.7	6.5	*	100.0
Other	6.8	22.0	23.4	5.8	27.6	12.2	2.4	100.0
Special trade	45.3	29.1	17.8	1.3	5.4	1.2	*	100.0
Total	27.6	27.9	23.4	4.7	10.5	5.6	0.3	100.0
1969								
Building	23.9	28.5	25.4	4.9	11.1	6.2	*	100.0
Highway, bridge and street	9.1	25.9	34.2	11.8	15.2	3.8	*	100.0
Other	5.9	18.1	21.2	9.3	27.6	14.1	3.8	100.0
Special trade	44.5	29.4	17.3	2.4	2.8	3.6	*	100.0
Total	27.2	27.3	22.9	5.3	10.5	5.9	0.5	100.0
1970								
Building	24.0	27.4	22.8	6.3	11.0	8.0	0.5	100.0
Highway, bridge and street	9.3	22.8	37.1	13.0	14.6	3.1	*	100.0
Other	5.1	14.1	20.4	5.0	47.9	5.6	1.9	100.0
Special trade	42.6	29.4	18.4	2.9	3.3	3.4	*	100.0
Total	26.3	25.6	22.4	5.6	14.3	5.4	0.5	100.0

* No firms reported.
Note: Because of rounding, totals may not correspond to component data.
Source: Based on data from Statistics Canada.

TABLE 1.3 DISTRIBUTION OF SALES OF INCORPORATED CONSTRUCTION FIRMS, BY SIZE GROUP, 1968-70 [14]

	Dollars				Percentage distribution			
	Construction	Manufacturing	Wood industry	Wholesale trade	Construction	Manufacturing	Wood industry	Wholesale trade
Assets								
Accounts receivable	88,394	298,001	116,328	127,935	26.7	13.9	11.4	28.4
Inventories	86,411	443,827	208,362	136,378	26.1	20.6	20.5	30.3
Other current assets	43,845	197,547	85,989	55,783	13.2	9.2	8.4	12.4
Total current assets	218,650	939,370	410,565	320,100	66.0	43.7	40.3	71.1
Land	10,743	40,438	16,949	10,211	3.2	1.9	1.7	2.3
Depreciable assets – net	63,906	760,318	379,605	55,277	19.3	35.4	37.3	12.3
Depletable assets – net	572	54,738	44,068	1,343	0.2	2.5	4.3	0.3
Total net fixed assets	75,221	855,495	440,621	66,831	22.7	39.8	43.3	14.8
Mortgages, investments, loans	13,067	39,553	26,497	14,012	3.9	1.8	2.6	3.1
Other assets	24,132	314,901	140,056	49,222	7.3	14.7	13.8	10.9
Total other assets	37,199	354,454	166,554	63,234	11.2	16.5	16.4	14.0
Total assets	331,084	2,149,319	1,017,740	450,169	100.0	100.0	100.0	100.0
Liabilities								
Loans	77,008	178,868	134,520	72,184	23.3	8.3	13.2	16.0
Accounts payable	69,985	189,620	95,932	84,285	21.1	8.8	9.4	18.7
Other current liabilities	27,093	189,065	69,548	63,002	8.2	8.8	6.8	14.0
Total current liabilities	174,086	557,554	300,056	219,471	52.6	25.9	29.5	48.8
Net long-term debt	44,869	276,567	196,610	25,807	13.6	12.9	19.3	5.7
Other long-term debt	32,259	257,503	197,740	47,561	9.7	12.0	19.4	10.6
Total non-current liabilities	77,129	534,070	394,350	73,368	23.3	24.8	38.7	16.3
Total liabilities	251,215	1,091,623	694,463	292,835	75.9	50.8	68.2	65.0
Equity								
Shares	16,606	354,220	144,520	42,967	5.0	16.5	14.2	9.5
Retained earnings	60,020	619,298	136,554	107,835	18.1	28.8	13.4	24.0
Other surplus	3,243	84,178	42,147	6,537	1.0	3.9	4.1	1.5
Total equity	79,869	1,057,696	323,277	157,335	24.1	49.2	31.8	35.0
Total liabilities and equity	331,084	2,149,319	1,017,740	450,169	100.0	100.0	100.0	100.0
Number of firms	19,920	1,770	21,811	24,493				

Note: Because of rounding and the process of averaging, some totals do not correspond to component data.

Source: Statistics Canada, *Corporation Financial Statistics*, Cat. No. 61-207, Ottawa, 1970.

TABLE 1.4 BALANCE SHEETS OF AVERAGE CORPORATIONS, SELECTED INDUSTRIES, 1970 [14]

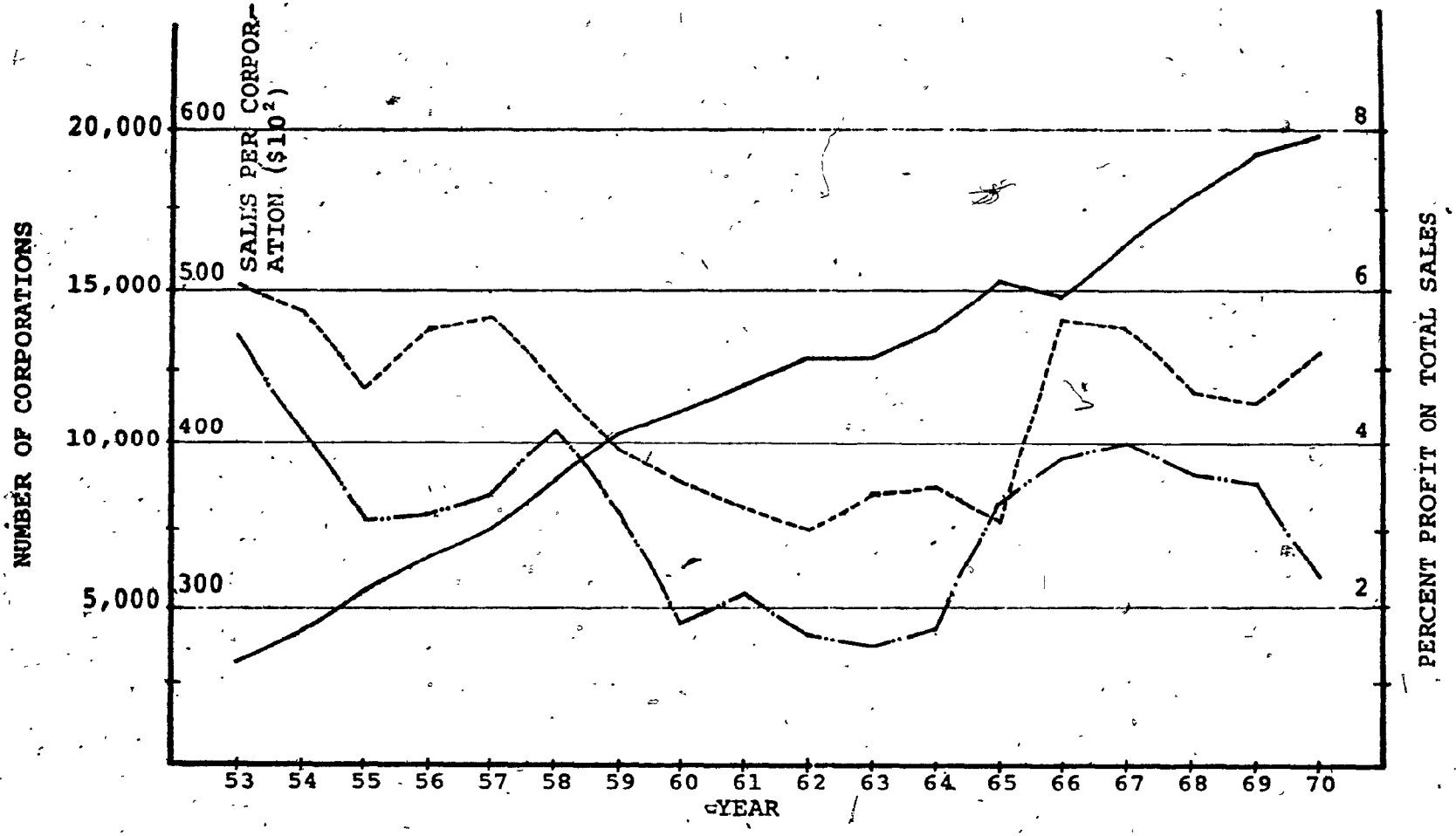


FIGURE 1.1 TRENDS IN THE CONSTRUCTION INDUSTRY

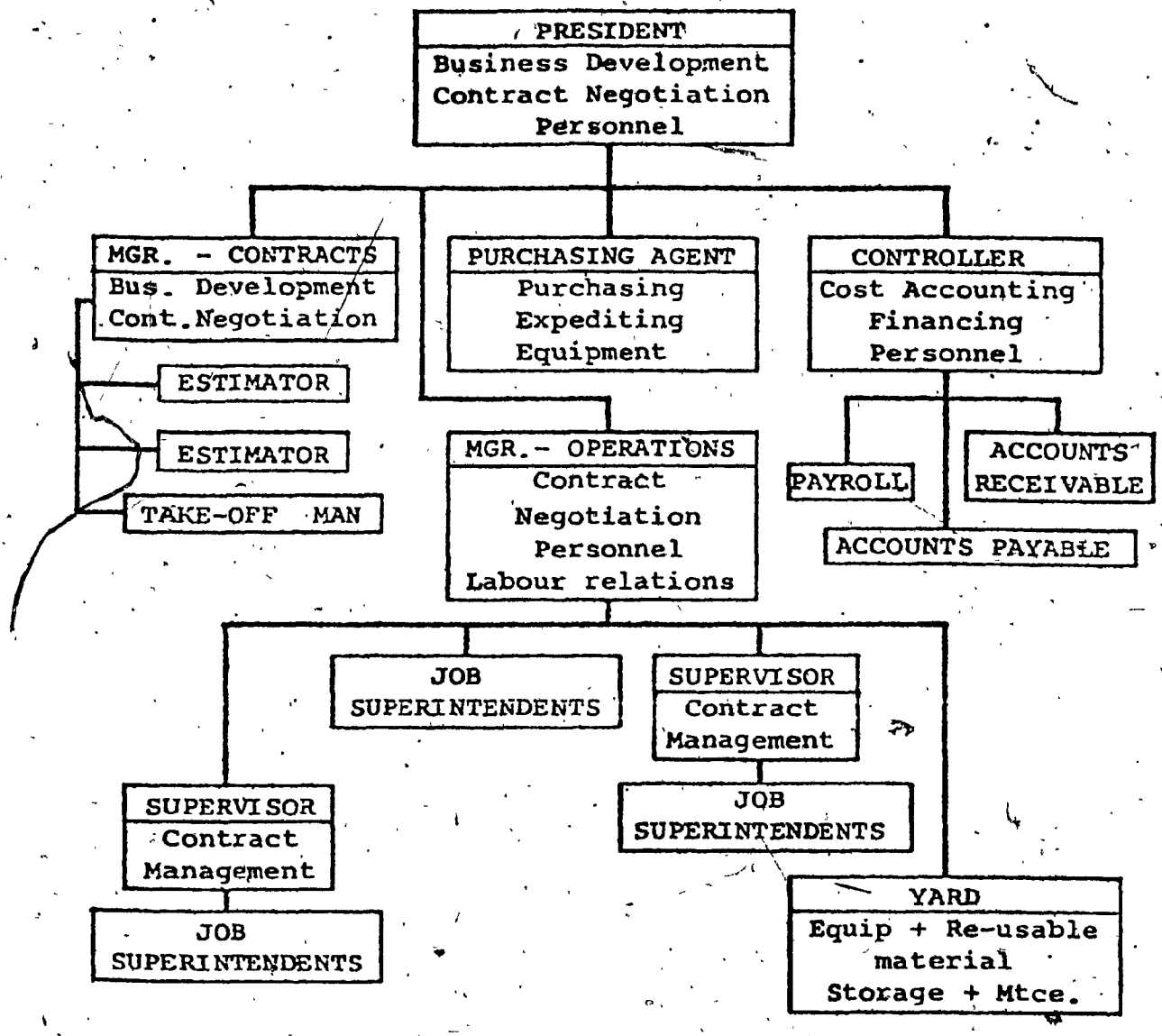


FIGURE 1.2 TYPICAL ORGANIZATION CHART FOR MEDIUM-SIZED CONTRACTOR STAFF [22]

CHAPTER 2

REPORTING SYSTEMS AND INFORMATION: SOME CONSIDERATIONS

CHAPTER 2

REPORTING SYSTEMS AND INFORMATION: SOME CONSIDERATIONS

2.1 INTRODUCTION

The objectives of this chapter are:

(i) to examine briefly the need, on the part of the contractor, to collect information and prepare reports on a regular basis, both for internal purposes and for external agencies;

(ii) to discuss briefly key issues to be considered when designing a reporting system;

(iii) to examine the types of information that must be collected and processed, outstanding issues regarding the collection of this information, and how some types of information may be evaluated.

The main purpose of this chapter is to provide the background material necessary for a complete understanding of subsequent chapters.

2.2 THE CONTRACTOR'S UNIVERSE

The business of a contractor may be somewhat simply described as the planning, scheduling and control of men, money, machines and materials in order to produce a product for a client which:

(i) meets the client's objectives in terms of time, cost and content, thereby enhancing the contractor's ability to acquire future work; and

(ii) produces a sufficient return on the contractor's investment of capital and time so that he is encouraged to continue in his business.

As described in Chapter 1, at any one time the medium-sized general contractor may have from 6 to 20 projects ongoing. To execute these projects, he is required to interact with many external agencies, and this interaction in many cases will be formalized in the sense that written reports must be prepared and submitted on a regular basis. Figure 2.1 depicts the key actors in the contractor's universe. Attention is focused here on a sub-set of these actors, namely the owner (or client), the surety, the bank, and the contractor himself, and in particular on the reporting needs of these agencies vis-a-vis the contractor.

In general, for a contractor to obtain a job, not only must his price be right, but he must appear qualified from the viewpoint of the owner and, in certain cases, depending on the size and complexity of the project, the owner's permanent and/or interim lenders may also check the qualifications of the contractor.

This qualification process may take several forms. It may involve the submission by the contractor of a dossier

detailing the firm's financial strength, previous job experience, jobs in progress, personnel capabilities, etc. It may also involve the posting of a certified cheque payable to the owner or the provision of surety bonds in favour of the owner, thus protecting him, at least in part, from the impact of a default on the part of the contractor.

Once the contractor has received the job, and depending on the type of work to be undertaken, he will normally submit a schedule and a cost breakdown of the work for purposes of having the client arrange for his financing as well as to facilitate prompt processing of progress claims once work is underway. During the course of the project, the contractor must submit reports on a regular basis (as stipulated in the contract documents) to the owner or his agent (the architect-engineer) in order to receive payment minus some specified holdback for work performed to date.

The need by most clients to protect their projects against the potentially-harmful consequences of a default by the contractor leads the contractor to seek a relationship with a surety company who, as a third party, agrees to indemnify the owner, called the obligee, against any default or failure on the part of the contractor, called the principal. In order for the contractor to receive such an endorsement from the surety he must at some stage have provided extensive documentation to the surety in regard to the company's capacity, capital, character and cost control procedures. Furter, in order to maintain this relationship once established,

the contractor must submit on a regular basis details of individual project progress as well as overall performance of the company.

The way in which monies flow (receipts and disbursements) with respect to a company's ongoing projects coupled with the holdback provisions set forth in each project's contract documents creates the need for the construction company to maintain a working capital credit line with a bank. In order to establish this credit line, the company is required to submit detailed information in regard to its capital, collateral, capacity and character. In order to maintain this credit line the firm is required to submit on a regular basis information pertaining to its progress on ongoing projects, its performance on completed projects and its overall performance.

In order for the firm to attain its own objectives as well as those of the client and to be in a position to provide appropriate information to its own personnel as well as to external agencies, it must maintain some form of a planning and control system. The basic elements of such a system are shown in Figure 2.2. The planning function is broadly defined and includes estimating, as well as determining the sequence of operations and the manner in which the various operations will be executed. The management decision function relates to the assignment of resources which can be made to this specific project as well as to the actions

to be taken should actual performance deviate from planned performance. Project status refers to the present condition of the project in terms of time, cost and content. This condition may vary from that planned because of the uncontrolled element labelled environmental attack. Detection refers to the process of comparing planned progress against actual progress. The feedback loop refers to the signals sent to management regarding the reasons, if identifiable, for any deviations from the project plan.

The system operates by providing information on the basic variables under the control of the contractor, these being men, money, machines and materials. Manipulation of these variables results in control of the methods which may be used as well as in the direct costs of activities and indirect costs which in turn result in the control of project time, cost and content.

This planning and control system should be applied to each of the company's projects in order to enhance its likelihood of continued success. The information output on each ongoing project must be integrated to provide an overall view of the performance of the company, both to its own management as well as to external agencies such as the surety and the bank.

The complexity of the planning and control process in terms of coordinating external agencies may be illustrated by the following example [31]. A $12 million (1968) building

project in the city of Toronto involved the following list of actors:

1	Owner
1	Architectural firm
3	Engineering firms; Mechanical, Electrical and Structural
5	Special consultants: soil, precast concrete, roofing, acoustic and interior design
1	General contractor
54	Sub-contractors
11	Sub-sub-contractors
3	Sub-sub-sub-contractors
178	Suppliers
310	Manufacturers

Also, in the course of this project, there were 781 Change Orders and 1,112 Field Work Orders.

While this project may not be typical of all the projects a firm may have ongoing at any one time, it does underscore the need for an effective planning and control system, both at the individual project level and at the top management level.

2.3 DESIGN CONSIDERATIONS FOR A REPORTING SYSTEM

The previous section indicated, in general terms, the need for formalized reporting, both for internal management of the company (including its projects) as well as for establishing and maintaining relationships with the contractor's clients, bank and surety.

To satisfy these reporting needs, many different types of reports are required. An attempt is made in Figure 2.3 to identify the range of reports required, although no claim is made regarding completeness. Of importance in this figure is the identification of the overlap of information needs on the part of the key actors shown. By accounting for the overlap of information needs, some streamlining of the company's reporting systems can be achieved.

Several key issues must be considered when designing an effective reporting system. They include:

(a) The objectives of the firm, and performance measures used to evaluate progress towards these objectives

Information must be reported in such a way that it aids the decision-making process which is directed at meeting the firm's objectives. The type and extent of basic data to be collected and processed must be justified in terms of how it contributes to the attainment of the firm's objectives.

(b) The specific nature of the firm's product(s), extent of work done by the firm itself, location of projects, range in size, complexity and duration of projects, types of contractual relations entered into (e.g., lump sum, unit price, etc.), etc.

Items of importance include:

(i) The range of roles the firm finds itself in (e.g., sub-contractor, general contractor, construction manager)

The flexibility of the reporting system developed (level of detail, range of report types, etc.), is in part a function of this range of roles.

(ii) The diversity of the firm's product

Specialization in one type of product permits a high degree of standardization in the reporting system and lessens the need for a high degree of flexibility.

(iii) The amount of work sub-contracted

The sophistication of the reporting system is directly proportional to the amount of work performed by the contractor himself.

(iv) The type of work performed

Of concern here is the balance between equipment,

labour, material and indirect costs associated with a typical project. The sophistication of the reporting system is proportional to the size of the labour and/or equipment input required of the contractor.

(c) The specific organizational structure of the firm, the assignment of functions to its members, the management styles of members of the firm, and their qualifications

For a reporting system to be accepted by members of the firm, they must cooperate and participate in its design. It must respond to their specific information needs in terms of level of detail, frequency, presentation format and management style. One way to facilitate the input of management to the design of the reporting system is to have them participate in the development of decision networks for each of the functions of management [13] in order to identify the information required for the execution of each function, the information output and action initiation associated with each function, and the breakdown of duties and responsibilities for each of the firm's personnel for each function.

(d) The identification of information readily available with respect to each of the firm's projects and the costs and benefits associated with collecting additional information

An aatempt must be made to optimize the use of information presently collected before requesting more. Central to

this optimization process is the analysis of functions described in (c) above. This analysis should be used to pinpoint existing data or information deficiencies. An assessment can then be made regarding the costs of collecting any additional information deemed to be of importance, the probability of getting this information accurately, at the right level of detail and at the right time, and the probable benefits to be derived from the collection and processing of this information [8, 18] Unless a simple and cheap mechanism can be identified for collecting additional information along with a convincing argument as to be benefits to be derived, it simply will not be done.

(e) The identification of assessment procedures and evaluation criteria used by external agencies such as the contractor's bank, surety and clients

By developing a detailed understanding of the manner in which external agencies view and evaluate reports submitted to them by the contractor, it should be possible to control information content and presentation format in a manner which will enhance the contractor's image with such agencies. Further, by incorporating these evaluation criteria in its own internal reports, management can become more objective in the evaluation of its own performance.

With respect to the above issues, this report has focused on item (e) and, to a much more limited extent, on items (c) and (d). These latter two items should receive priority in any future work directed at developing improved reporting systems in order to enhance the potential for acceptance and adoption, by the contracting community, of such systems. The direct involvement by industry in such work is seen as crucial to the overall success of the research program described in Chapter 1.

2.4 INFORMATION TYPES

To satisfy his reporting needs, the contractor is required to collect, process and present many different types of information. Figure 2.4 depicts a useful way of classifying information types. Attention is focused here on quantitative information and, in particular, on accounting information.

2.4.1 Management Accounting Information

The purpose of management accounting information is to summarize the operations of the firm in a manner which facilitates the execution of the duties and responsibilities of management. It is meant for internal use only and focuses on providing information on events in the past (historical data), for attention-directing and problem-solving (control), and on providing estimates for the future. The basic source of management accounting information is the individual project

and the process used to collect this information is known as cost accounting. The accuracy with which this information is collected and processed determines the reliability of all other accounting information generated. Attention is focused here on the role of cost accounting in the company's reporting system and on issues yet to be resolved. A description of the purpose and application of differential accounting and responsibility accounting may be found in reference [2].

Cost accounting is concerned not only with expenditures and their timing in regard to men, money, machines and materials but with the amount of work accomplished by these expenditures. Hence cost accounting information is not expressed solely in terms of monetary units. A well-designed cost accounting system can have up to five main functions, all of which are directed at enhancing the firm's potential for success. These functions are:

(i) to provide information for estimating new projects;

(ii) to provide information essential for the effective cost control of existing projects;

(iii) to provide information for use in the evaluation of the performance of personnel;

(iv) to provide a basis for forecasting and controlling cash flow;

(v) to enhance the potential for good relations between the contractor and his client, bank and surety.

Before implementing a cost accounting system, the contractor must identify which of the above functions he is concerned with, as the amount of information to be collected, processed and presented is determined, in part, by the management functions to be aided by such a system. Other issues to be considered prior to design and implementation of a cost accounting system relate to those discussed in Section 2.2 in regard to the design of an overall reporting system. A brief discussion of each of the five functions identified above is presented here in order to identify issues still to be resolved if cost accounting is to be adopted in any meaningful way.

(i) Estimating New Projects

Work must be directed at identifying a mechanism for integrating the estimating, planning and cost accounting system in terms of using identical breakdowns of the job and common units of measurement. This is crucial if the job estimate is to act as a budget for purposes of project cost control and if the need for collecting basically the same information but in different ways is to be avoided. (To date, no effective means has been found for integrating project time and cost control systems [7]). Further, a way must be found for cataloguing previous job experience and processing it for use in estimating future jobs. This cataloguing process must include the documentation of the manner in which a project was executed in terms of the methods used, productivity, special conditions, etc.

(ii) Cost control of ongoing projects

Ways must be sought of convincing field personnel of the importance of accurate and timely recording of information. Simple data collection formats must be devised which enhance the potential for obtaining accurate information and which minimize the expenditure on the data collection process. Of particular importance is the development of reporting formats for the assessment of labour and equipment productivity. Work must be directed at determining:

(a) the level of detail of information required for the proper identification of causes of deviation from planned progress so that appropriate corrective action can be initiated;

(b) whether this information can be collected with sufficient accuracy and processed with sufficient speed so as to permit effective control; and

(c) what the respective benefits and costs are of collecting this information, if it can be done.

(iii) Evaluation of personnel

Once personnel realize that the information they collect can beused to evaluate their performance, they may work to sabotage the system by providing inaccurate inputs to the system. The potential for this conflict may be diminished somewhat

if supervisory personnel are told a priori what is expected of them, and they input into determining what this expectation is as well as how it is to be achieved. Further, it is crucial that supervisory personnel be assigned the appropriate authority over the part of the project for which they are held accountable. Attention must also be focused on the tendency of personnel to report information to their superiors in the way they perceive their supervisors want to hear it. "This does not necessarily imply transmitting false information or withholding vital but unpleasant facts. The tailoring may require only a shift in emphasis and an underplaying of undesirable matters." [10]. The behavioural problems associated with the use (or abuse) of a reporting system must be taken into account in the design and implementation process if the system is to have a reasonable chance to succeed.

(iv) Basis for a cash flow forecasting and control system

Cash flow management both at the individual project level and the overall company level is grossly inadequate at present [22]. Incorporating the cost accounting system into a cash flow management system would permit management to have a complete overview of each project in terms of revenues, disbursements and progress to date. It may also provide a mechanism for integrating the estimating, planning and cost accounting systems into one as described in Item (i). Efforts must, therefore, be directed first at determining the feasibility of integrating these management functions into one, and

second of convincing management of the desirability of doing so should it prove feasible.

(v) Enhancement of relations between the contractor and external agencies

While it seems intuitively obvious that a firm which has an effective control system would enjoy better relations with its clients, bank and surety (in terms of more prompt progress payments, more lenient credit terms, more bonding capacity, etc.) it is another manner to prove it. If such benefits could be documented, the resistance on the part of contractors to upgrade their present cost accounting systems (or to start one) could, perhaps, be considerably lessened. How to identify and document such benefits is yet to be determined.

2.4.2 Financial Accounting Information

Management accounting information is prepared solely for internal use, whereas financial accounting information is prepared both for internal and external use. Thus, the process used to prepare and present financial accounting information follows well-established guidelines [3,17,29]. The basic source of information for preparation of financial statements is the management accounting system and hence their reliability is almost solely a function of the accuracy with which cost accounting data is collected. This sub-section focuses briefly on the purpose of financial statements, the importance

of the accounting method selected for their preparation and the evaluation criteria which can be used to assess them.

Financial information is summarized in two main statements, these being the balance sheet, which describes the company's financial position at a specific point in time, and the income statement (profit and loss statement), which describes the success (or lack of it) of the company over a specific period of time. These statements serve five vital functions, which are:

(i) to satisfy legal requirements for tax purposes;

(ii) to provide information required to be made public (for publicly-owned companies only);

(iii) to provide information for credit purposes (bank, surety, etc.);

(iv) to provide management and/or owners with information relative to the success or failure of the total business for a specific period of time; and

(v) to provide management with the financial condition at a specific point of time.

Other supplementary statements of financial information include a schedule of contracts, which describes progress to date on ongoing projects, a statement of accounts receivable (aged), a statement of holdbacks receivable and cash flow projections.

The usefulness of the message conveyed by the various financial statements is somewhat a function of the accounting method used. The accounting problems faced by the contractor are different than those of, say, a manufacturer because of the nature and duration of the work performed. In particular, the timing of receipts and disbursements for work performed may not be closely related to actual progress on the job itself. This, coupled with the fact that contracts may be front-end loaded, profit may not be extracted uniformly from the various projects undertaken and that projects may extend over two or more accounting periods, creates some difficulty in obtaining an accurate picture of the contractor's current financial status.

There are basically four accounting methods which may be used by the contractor. They are the cash method, the accrual method, the percentage-of-completion method and the completed-contract method. A brief discussion of each of these methods is presented below and is extracted from [25]. A more detailed discussion of the application and advantages and disadvantages of each of these methods may be found in [29].

Cash Method: This method dictates the recording of income and expenses in the period when received and paid, respectively, without regard to the period to which they may actually apply. In most situations this method may be unsatisfactory despite its great advantage of simplicity. The cash method when appropriate will generally be with small contractors having short-run contracts with minimal unpaid receivables and payables. It is often exceedingly difficult to evaluate how well a contractor is really doing since this method does not truly

measure performance. Rather this method measures the contractor's customer's ability to pay and the contractor's ability to pay his own bills. A balance sheet for a contractor using the cash method may not reflect the company's true net worth because of the absence of accounts receivable, unbilled work in process, materials inventory and accounts payable.

Accrual Method: The accrual method is based upon relating income and expenses to the specific period of time, such as a month or year. Therefore income and expenses are recorded when incurred rather than when cash is actually received or paid. This method, in the proper situation, gives a better measure of performance than the cash method. While not as simple to employ as the cash method, the relatively little additional bookkeeping required permits a more intelligent evaluation of the contractor's financial position. The accrual method generally forces management to consider on a continuing basis the subjective data which have a significant impact upon his profitability. Such areas which are constantly evaluated are: a customer's inability to pay, retentions on billing (retainage), unapproved change orders, and recognition of losses on contracts prior to completion.

The accrual method is generally appropriate where all of the contractor's jobs are relatively short-term. Where a contractor has a mixture of short-term and long-term contracts the accrual method can be combined with an alternative method. For short-term contracts the accrual method is used, and for long-term contracts either the percentage-of-completion or completed-contract method is employed.

Percentage-of-Completion Method: This method is the first of two methods which are acceptable for accounting for long-term fixed-price contracts. The American Institute of Certified Public Accountants considers the percentage-of-completion method 'preferable when estimates of costs to complete and extent of progress towards completion of long-term contracts are reasonably dependable.' This method dictates the recognition of income as the work is performed on a current basis. As a result, income is recorded on uncompleted contracts based upon performance as opposed to when billed (accrual method) or when the contractor is paid for his work (cash method).

The portion of the contract's profit to be recognized as the job progresses is determined by either:

(1) 'that percentage of estimated total income that incurred costs to date bear to estimated total costs after giving effect to estimates of costs to complete based on most recent information', or

(2) 'that percentage of estimated total income that may be indicated by such other measure of progress toward completion as may be appropriate having due regard to work performed.'

It is obvious from the above that the percentage-of-completion method has a major disadvantage due to its necessary dependence upon estimates of costs necessary to complete the job and estimates of how much the contract income will be. Despite this disadvantage, where reasonably reliable estimates are available this method presents most fairly the measure of success a company is realizing.

Completed-Contract Method: The completed contract method is the second of the acceptable methods of accounting for long-term contracts. Under this method the contract billings and related job costs are accumulated on the balance sheet and no profit is recognized until the contract is substantially complete. The AICPA has stated that this method is 'preferable when lack of dependable estimates or inherent hazards cause forecasts to be doubtful.' The advantage of this method is that results are reported only when finally determined. The major disadvantage is that there is no measure of current performance and it causes substantial fluctuations of net earnings of the company from one year to the next.

[25]

Figures 2.5 and 2.6 depict an example profit and loss statement and balance sheet respectively, based on the percentage-of completion accounting method [29]. Appendix A contains similar statements but for the completed-contract method of accounting.

The interpretation of what constitutes acceptable entries under the various categories on the financial statements is a function of the viewpoint of the person or agency analyzing them. As an example, accounts receivable which have been outstanding, say, over 90 days, may not be allowed as a current asset by the surety or the bank but will be treated as a bad debt. The viewpoints of two such external agencies with respect to the assessment of different entries on financial statements are presented in Chapters 3 and 4.

One useful way of assessing financial statements is by ratio analysis. The particular ratios examined by an agency are a function of the relationship between itself and the firm. In the case of a bank faced with the task of considering whether or not to grant a short-term loan, it may examine ratios which reflect the firm's liquidity position. On the other hand, long-term creditors may place more emphasis on earning power and operating efficiency. Similarly, equity investors are interested in long-term profitability and efficiency. Management must be concerned with all viewpoints, as it is responsible not only to itself but to all external agencies such as the bank, surety, client, shareholders, etc.

The ratios used to analyse financial statements can be classified into four categories:-

(i) profitability ratios, which measure management's overall effectiveness as shown by the returns generated on sales and investment;

(ii) liquidity rations, which measure the firm's ability to meet its maturing short-term obligations;

(iii) activity ratios, which measure how effectively the firm is using its resources; and

(iv) leverage ratios, which measure the extent to which the firm has been financed by debt.

The following ratios are of interest with respect to the financial position of a construction firm [32]. They have been grouped into four categories as described above.

PROFITABILITY RATIOS

Net Profit to Revenue before and after taxes

The net profits on revenue or "profit margin", is a critical measure of profitability. It indicates, to some extent, a company's competitive strength, or its susceptibility to a decrease in either its sales volume or its profits. Usually, an increase in sales will widen the profit margin, since fixed costs need not rise in direct proportion to sales. Also for this reason, profits tend to increase or decline more rapidly percentage-wise than do sales. This has a direct bearing upon tendering practice.

Net Profit to Equity, before and after taxes

The relationship between net profit and equity is one of the most meaningful of all financial ratios, and is often considered the best measure of profitability and efficient use of invested capital. If the return on invested capital is low, the capital involved could probably be used elsewhere to better advantage. The question remains one of whether the same capital employed at the same risk can yield a greater return in some other application.

Profit to Working Capital, before and after taxes

Working capital represents the equity of owners in the current assets, and is equal to current assets minus current liabilities. This equity represents the "cushion" available to the firm for carrying inventories and receivables, and for financing day-to-day operations. The ratio of net profits to working capital is useful for measuring the profitability of firms whose operating funds are provided largely through borrowings, or whose permanent capital is abnormally small in relation to the volume of income.

Net Profit to Total Assets, before and after taxes

The ratio of net profit to total assets is closely related to the net profit equity ratio. The theory is that the effectiveness of a company's operations should be analyzed in terms of all its assets, including capital provided by creditors as well as provided by investors. An ideal situation would be to evaluate all fixed assets, whether owned or leased, on present-day values to obtain a complete measure of all assets used currently. However, because of bookkeeping procedures, this is not possible.

LIQUIDITY RATIOS

Current Assets to Current Liabilities

This ratio, called the "current ratio" is the most commonly-used figure in analyzing balance sheets. It gives an

indication of the margin of protection for short-term creditors. It general, the more liquid the current assets, the less margin that is needed to cover current liabilities. A current ratio of 2 for 1 is considered standard; a ratio of more than 5 to 1 is unnecessary and may, in fact, be a sign of weakness. Anything less than the standard may be critical.

Cash to Current Liabilities

The ratio of cash and equivalent (marketable securities) to current liabilities, known also as the "liquidity ratio", is an important supplement to the current ratio. The liquidity ratio indicates the immediate ability of a company to meet current obligations.

Fixed Assets to Equity

This ratio is used primarily to measure a firm's tendency to over-invest in fixed assets. A high ratio of fixed assets to equity results in heavy depreciation and interest burdens. This can lead to serious profit problems should revenue difficulties be encountered. This ratio should seldom be allowed to exceed 100 percent.

Rental Income to Revenue

This ratio indicates the dependency of operations upon leasing arrangements. A high level of machinery rentals to other firms suggests excess capacity in the firm and excessive capital commitments. If this ratio is high it should be

scrutinized to see if it is contributing adequately to the operations of the business.

Accounts Receivable to Revenue

This ratio indicates the length of period needed to collect accounts. Lengthy periods suggest that the firm is carrying debtors with some financial risk. Both the cost of financing debtors and their risk must be carefully related to other financial ratios to determine how vulnerable the firm has become. (The average collection period in days is computed by multiplying the accounts receivable to revenue ratio by 365.)

ACTIVITY RATIOS

Revenue to Equity

The revenue-equity ratio provides a means of determining the average turnover of owners' capital during the year; it shows how actively the firm's capital is being put to work. If capital is turned over too rapidly, liabilities build up excessively and must be financed expensively by creditors. Conversely, if capital is turned over too slowly, funds become idle and profitability is not maximized.

Revenue to Working Capital

This ratio measures the turnover of working capital. Most businesses require a surplus of current assets over and above current liabilities to allow for cash paid out for

inventory, and to carry ensuing receivables after work is performed. This working capital turnover rate can expose a financial problem. If the ratio between revenue and working capital is too high, the tendency of the business is to owe too much, because it depends on credit granted by suppliers, banks and others as a substitute for an adequate margin of current operating funds.

Revenue to Fixed Assets

The ratio of revenue to fixed assets is significant when compared with the same ratio from previous years, since such a comparison will show whether or not the funds used to increase productive capacity are being spent wisely.

LEVERAGE RATIOS

Current Liabilities to Equity

The ratio of current liabilities to equity provides a means of evaluating the firm's financial condition by comparing what is owed with what is owned. Whenever the relationship between current debt and equity exceeds 80 percent, some financial weakness is indicated in that the business is overly dependent upon its creditors. This leads to high costs of operation except where creditors are providing cheap money.

Total Liabilities to Equity

When the total liabilities-equity ratio exceeds 100 percent,

the equity of creditors in the assets of the business is greater than the equity of the owners. This makes the firm extremely vulnerable to unanticipated contingencies, and severely limits management flexibility. It may easily be that the creditors may be earning more from the operation than the owners, with little financial risk.

Table 2.1 summarizes the computation of the various ratios for the financial statements prepared using the percentage-of-completion method, and the completed-contract method. As seem from this table, various interpretations of the company's financial status can be obtained depending on the accounting method employed. Of importance to the firm and to those evaluating it is how have the various ratios varied with time and how do they compare with other similar companies. Tables 2.2 and 2.3 depict average values for various ratios and their change with time for Canadian construction firms in general (Table 2.2) and building contractors in particular (Table 2.3)[30]. Appendix B contains similar figures for highway, bridge and street contractors and special trade contractors.

TYPES OF RATIOS	METHODS OF ACCOUNTING: Completed Contract Basis	Percentage of Completion Basis
A. PROFITABILITY RATIOS	(%)	(%)
1. Net Profit to Revenue		
- before taxes	1.71	0.11
- after taxes	0.87	0.09
2. Net Profit to Equity		
- before taxes	16.41	1.42
- after taxes	12.83	1.12
3. Profit to Working Capital		
- before taxes	14.38	1.33
- after taxes	11.24	1.05
4. Net Profit to Total Assets		
- before taxes	3.54	0.52
- after taxes	2.77	0.41
B. ACTIVITY RATIOS	(Times)	(Times)
1. Revenue to Equity	14.73	12.48
2. Revenue to Working Capital	12.90	11.71
3. Revenue to Fixed Assets	92.34	166.84
C. LEVERAGE RATIOS	(Times)	(Times)
1. Current Liabilities to Equity	3.33	1.58
2. Total Liabilities to Equity	3.63	1.72
D. LIQUIDITY RATIOS	(Times)	(Times)
1. Current Assets to Current Liabilities	1.34	1.67
2. Cash to Current Liabilities	0.05	0.05
3. Fixed Assets to Equity	0.16	0.07
4. Accounts Receivable to Revenue	0.27	0.19

TABLE 2.1

COMPARISON OF FINANCIAL RATIOS BASED ON TWO DIFFERENT ACCOUNTING METHODS

RATIO / YEAR	After Tax Profits To Sales (%)	After Tax Profits To Equity (%)	Current Assets To Current Liabilities	Fixed Assets to Equity (%)	Collection Record (Days)	Revenue to Equity	Current Liabilities To Equity (%)	Total Liabilities To Equity (%)
1967	1.55	9.91	1.41	95.3	72	6.38	171.2	311.0
1968	2.13	12.93	1.18	86.8	78	6.06	224.5	300.9
1969	2.35	16.08	1.25	74.1	78	6.82	240.7	285.8
1970	2.30	14.16	1.27	76.5	77	6.13	215.8	257.4
1971	2.31	12.11	1.29	76.6	76	5.24	205.2	258.4
1972	2.31	12.11	1.29	76.6	76	5.24	205.2	258.4
1973	1.43	8.19	1.29	80.6	77	5.73	219.5	276.1
1974	2.43	13.06	1.28	75.9	75	5.38	217.1	266.8

D. CONSTRUCTION

TABLE 2.2 FINANCIAL RATIOS FOR CANADIAN CONTRACTORS 1967-1974 [30]

RATIO / YEAR	After Tax Profits To Sales (%)	After Tax Profits To Equity (%)	Current Assets To Current Liabilities	Fixed Assets to Equity (%)	Collection Record (Days)	Revenue to Equity	Current Liabilities To Equity (%)	Total Liabilities To Equity (%)
1967	0.95	6.78	1.43	112.2	72	7.10	211.0	411.7
1968	1.97	13.08	1.16	102.4	76	6.61	302.9	415.9
1969	1.92	14.29	1.18	87.3	80	7.42	355.1	435.8
1970	2.29	14.90	1.25	95.5	84	6.49	309.4	393.2
1971	2.55	13.44	1.24	104.1	85	5.25	301.2	411.1
1972	2.55	13.44	1.24	104.1	85	5.25	301.2	411.1
1973	1.56	8.39	1.23	105.1	83	5.38	302.0	411.5
1974	2.59	13.27	1.25	106.5	84	5.13	299.1	403.2

A. BUILDING CONTRACTORS

TABLE 2.3 FINANCIAL RATIOS FOR CANADIAN BUILDING CONTRACTORS 1967-1974 [30]

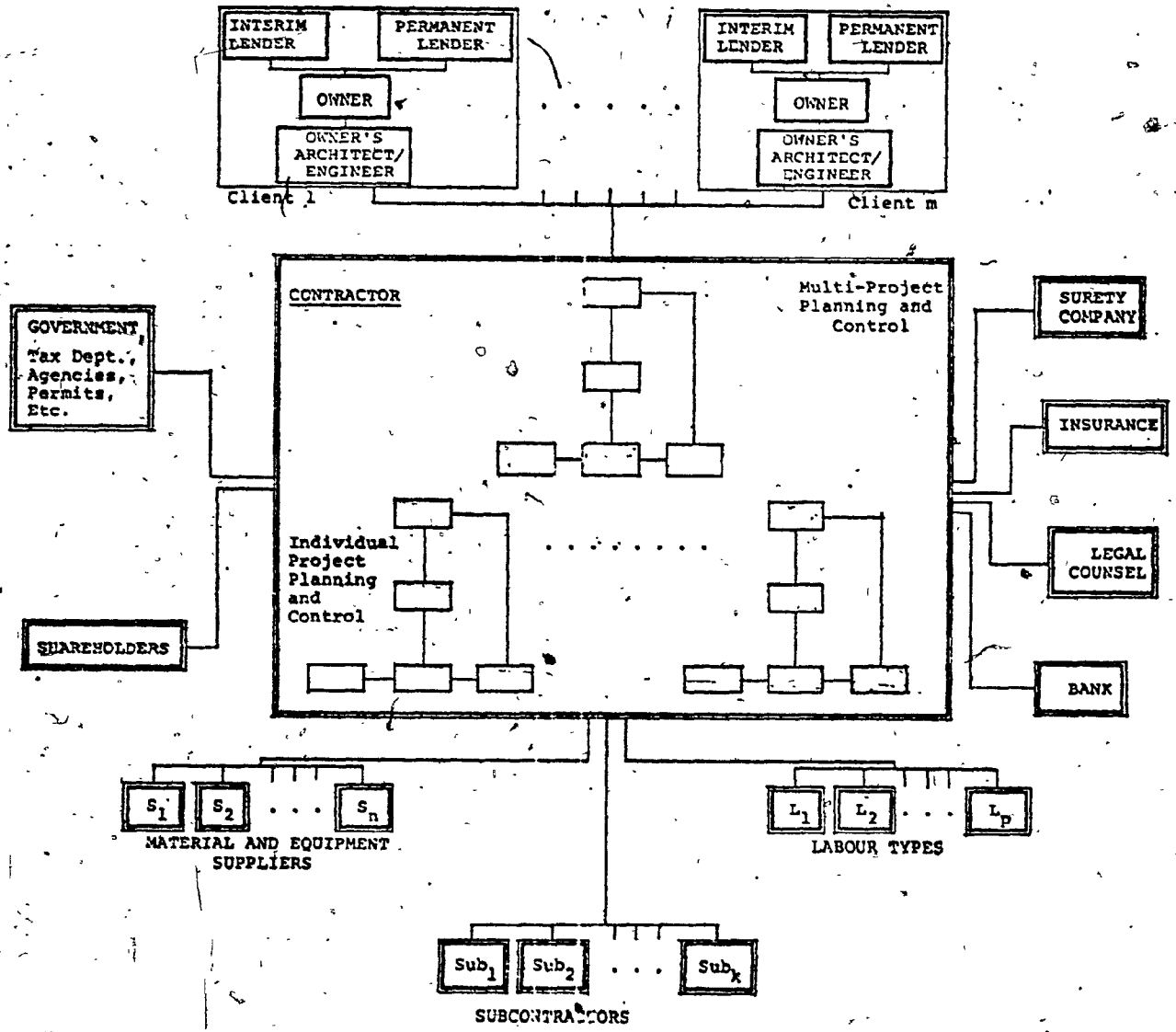


FIGURE 2.1 THE CONTRACTOR'S UNIVERSE

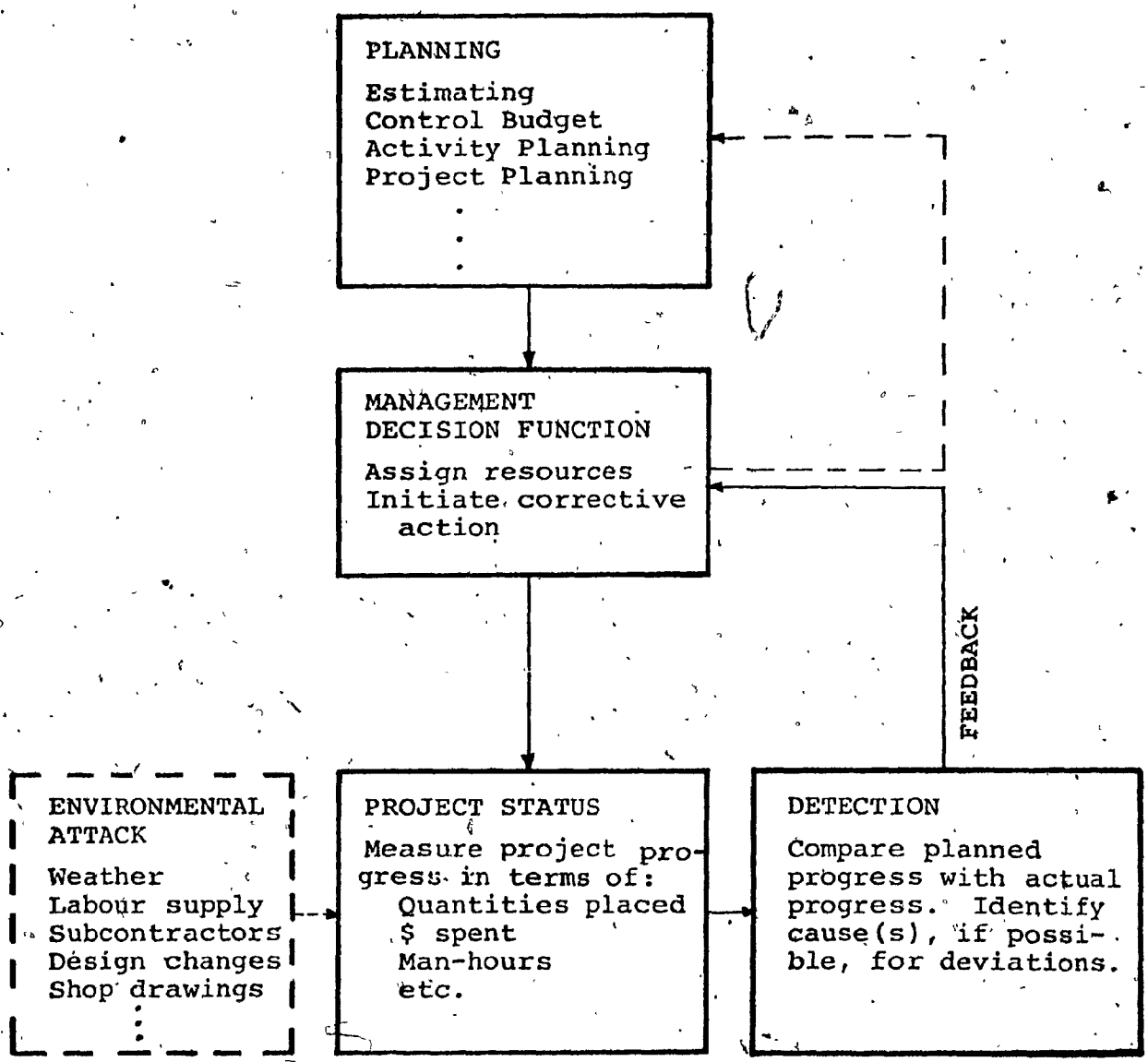


FIGURE 2.2 ELEMENTS OF A PLANNING & CONTROL SYSTEM

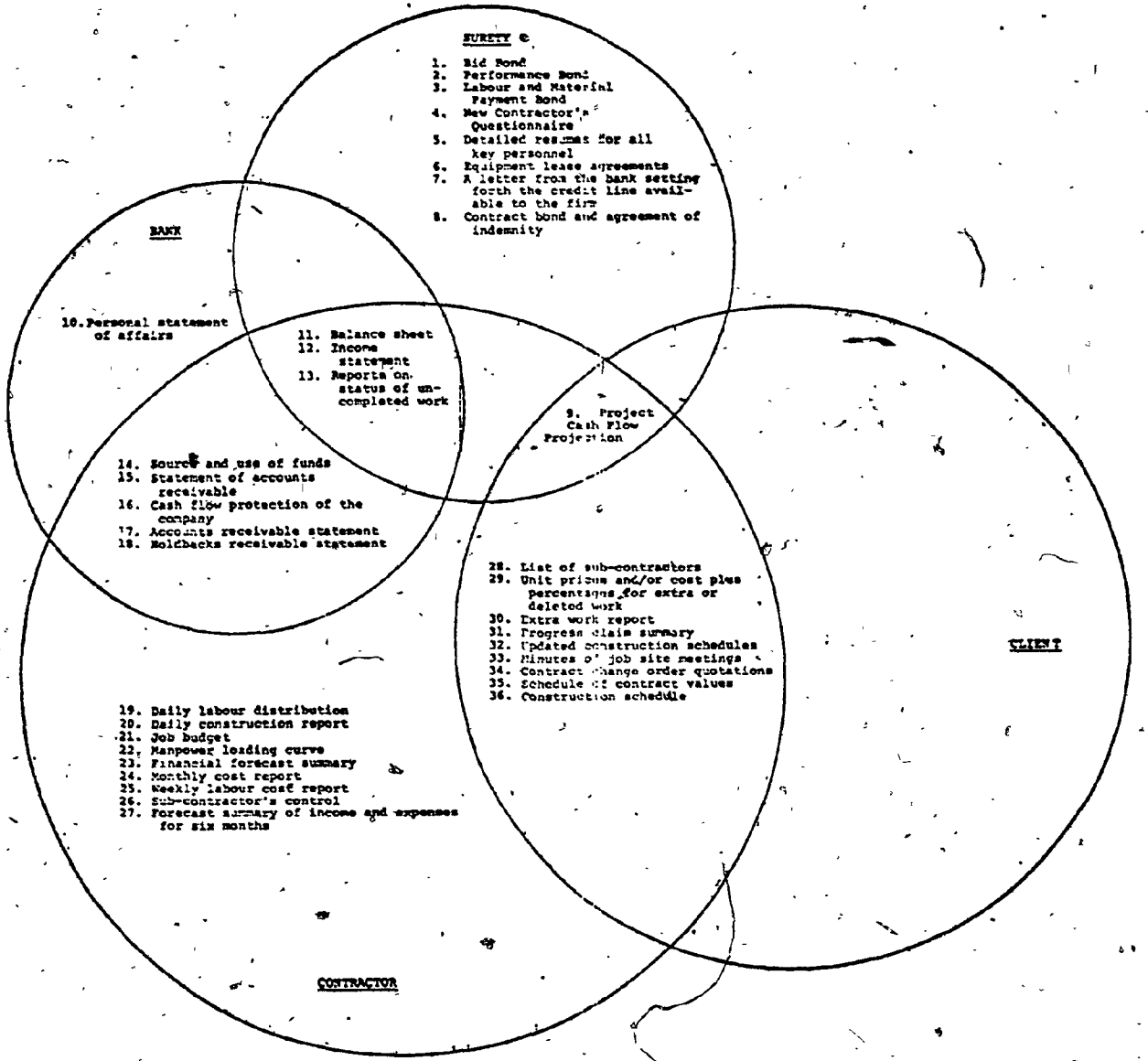


FIGURE 2.3 REPORTING NEEDS OF THE CONTRACTOR

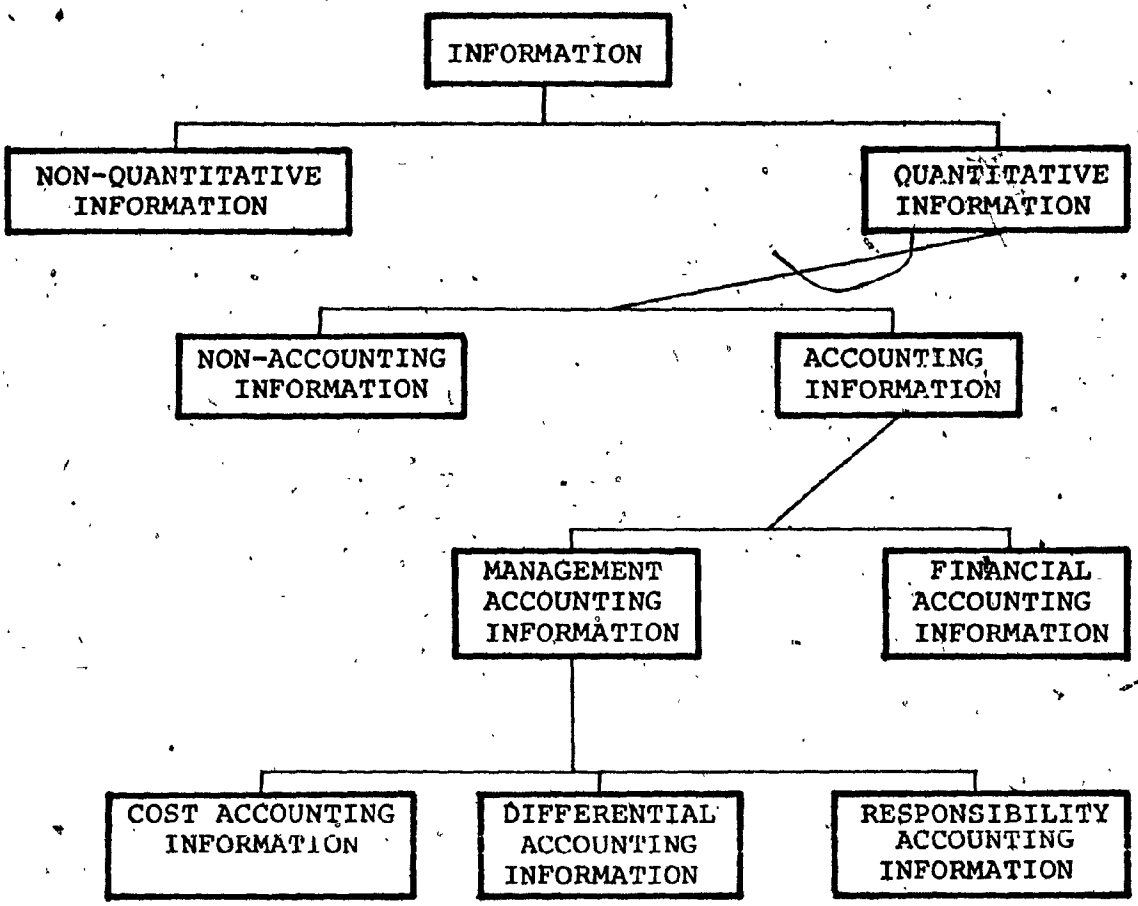


FIGURE 2.4 CLASSIFICATION OF INFORMATION TYPES

PERCENTAGE-OF-COMPLETION
CONTRACTING CO., INC.
STATEMENT OF INCOME
(PERCENTAGE-OF-COMPLETION BASIS)
FISCAL YEAR ENDED NOVEMBER 30, 19--

CONSTRUCTION INCOME - SCHEDULE "B-1"		$ 3 862 515 84
COST OF CONTRACTS - SCHEDULE "B-1"		3 393 912 64
GROSS PROFIT EARNED ON CONTRACTS - FROM INCEPTION OF CONTRACTS - SCHEDULE "B-1"		$ 468 603 20
LESS: GROSS PROFIT REFLECTED DURING PRIOR FISCAL PERIODS - SCHEDULE "B-1"		250 252 90
TOTAL GROSS PROFIT EARNED ON CONTRACTS - SCHEDULE "B-1"		$ 218 350 30
ADD: GROSS PROFIT RESULTING FROM TERMINATION OF PERFORMANCE GUARANTEES		50 000 00
TOTAL GROSS PROFIT EARNED ON CONTRACTS INCLUSIVE OF INCOME ARISING FROM TERMINATION OF PERFORMANCE GUARANTEES		$ 268 350 30
GENERAL DIRECT CONTRACT OVERHEAD EXPENSES:		
ENGINEERING SALARIES	$ 62 406 94	
BLUEPRINTS AND DRAFTING SUPPLIES	423 99	
LICENSES AND PERMITS	527 18	
TRAVEL	2 347 41	
MISCELLANEOUS JOB COSTS	1 436 16	
TOOLS EXPENSE	269 22	
SUPERVISION SALARIES	2 459 62	
ESTIMATING EXPENSE	261 71	
CONSULTING FEES	150 00	
TOTAL GENERAL DIRECT CONTRACT OVERHEAD EXPENSES (BEFORE APPLICATION OF UNDER-APPLIED PAYROLL CHARGES AND UNDER-APPLIED TRUCK EXPENSES AND TRUCK DEPRECIATION)	$ 70 324 23	
ADD: UNDER-APPLIED PAYROLL CHARGES	1 287 64	
UNDER-APPLIED TRUCK COSTS	465 14	
TOTAL GENERAL DIRECT CONTRACT OVERHEAD EXPENSES		72 037 01
GROSS PROFIT EARNED ON OPERATIONS		$ 196 282 87
SELLING EXPENSES:		
BIDDING EXPENSES	$ 882 80	
SALES PROMOTION	1 215 87	
CHRISTMAS EXPENSE	601 22	
AUTOMOBILE AND TRAVEL EXPENSES	6 229 73	
BUILDING REPORTS - SUBSCRIPTIONS	2 058 30	
ADVERTISING	200 00	
TOTAL SELLING EXPENSES		10 975 72
SELLING PROFIT (FORWARDED)		$ 185 307 15

PERCENTAGE-OF-COMPLETION
CONTRACTING CO., INC.
STATEMENT OF INCOME
(PERCENTAGE-OF-COMPLETION BASIS)
FISCAL YEAR ENDED NOVEMBER 30, 19--

SELLING PROFIT (BRT. FWD.)		$ 185 307 15
GENERAL AND ADMINISTRATIVE EXPENSES:		
GENERAL REPAIRS	$ 385 06	
OFFICE EQUIPMENT REPAIRS	806 33	
CLEANING	577 60	
HEAT, LIGHT AND POWER	954 19	
GROUND MAINTENANCE	449 80	
DEPRECIATION ON FIXED ASSETS	1 590 48	
AUTO AND TRAVEL	469 18	
INTEREST AND BANK CHARGES	1 534 97	
PAYROLL TAXES	1 866 35	
TELEPHONE AND TELEGRAPH	15 591 39	
STATIONERY AND PRINTING AND OFFICE EXPENSE	2 832 10	
PROFESSIONAL SERVICES	5 068 00	
OTHER TAXES	8 345 32	
INSURANCE	10 110 25	
POSTAGE	876 19	
OFFICE SALARIES	11 651 63	
OFFICERS' SALARIES	143 200 00	
DUES AND SUBSCRIPTIONS	84 10	
DONATIONS	5 00	
TOTAL GENERAL AND ADMINISTRATIVE EXPENSES		172 338 91
OPERATING PROFIT		$ 12 027 36
OTHER INCOME:		
POST-CLOSING INCOME - SCHEDULE "B-2"	$ 10 106 80	
PURCHASE DISCOUNTS	2 086 88	
MISCELLANEOUS INCOME	11 50	
COMMISSION INCOME	159 65	
TOTAL OTHER INCOME		12 366 92
NET INCOME FOR THE FISCAL YEAR (BEFORE PROVISION FOR PROFIT-SHARING CONTRIBUTION)		$ 24 394 28
PROVISION FOR PROFIT-SHARING TRUST CONTRIBUTION		20 920 00
NET INCOME FOR FISCAL YEAR (BEFORE PROVISION FOR FEDERAL INCOME TAX)		$ 4 394 28
PROVISION FOR FEDERAL INCOME TAX		931 59
NET INCOME FOR THE FISCAL YEAR (AFTER TAXES)		$ 3 462 67

RETAINED EARNINGS AT DECEMBER 1, 19--	$ 330 916 61
ADD: NET INCOME FOR THE FISCAL YEAR UNDER REVIEW - PER EXHIBIT "B"	3 462 67
RETAINED EARNINGS AT NOVEMBER 30, 19--	$ 334 379 28

FIGURE 2.5 PROFIT AND LOSS STATEMENT BASED ON PERCENTAGE-OF-COMPLETION METHOD [29]

PERCENTAGE-OF-COMPLETION
CONTRACTING CO., INC.
BALANCE SHEET
(PERCENTAGE-OF-COMPLETION BASIS)
NOVEMBER 30, 19x5

ASSETS

CURRENT ASSETS:		
CASH IN BANKS		$ 23 989 78
ACCOUNTS RECEIVABLE - REQUISITIONED - SCHEDULE "A-1" *		573 023 08
ACCOUNTS RECEIVABLE - NOT REQUISITIONED - SCHEDULE "B-1"		264 292 00
LOANS RECEIVABLE		52 93
INVENTORY - MATERIALS (AS SUBMITTED)		6 781 56
DEPOSITS - BIDS, PLANS AND SPECIFICATION - SCHEDULE "A-3" *		27 540 00
DUE FROM EMPLOYEES - SCHEDULE "A-2" *		8 039 99
DUE FROM VENDORS - SCHEDULE "A-4" *		1 089 72
DUE FROM JOINT VENTURE		5 322 56
PREPAID INSURANCE		7 139 23
PREPAID TAXES AND EXPENSES		349 22
TOTAL CURRENT ASSETS		$ 317 620 06
FIXED ASSETS: (AT COST) - SCHEDULE "A-6" *		
LAND	$ 3 800 00	
BUILDING AND IMPROVEMENTS	20 280 59	
AUTOS AND TRUCKS	17 912 02	
GARAGE BUILDING	6 128 86	
EQUIPMENT	4 929 50	
FURNITURE AND FIXTURES	7 971 97	
AIR CONDITIONERS	1 579 85	
TOTAL	$ 61 803 19	
LESS: ACCUMULATED DEPRECIATION	38 652 62	
TOTAL FIXED ASSETS (BOOK VALUE)		23 150 57
OTHER ASSETS: DEPOSIT		425 00
TOTAL ASSETS		$ 341 195 63

LIABILITIES AND CAPITAL

CURRENT LIABILITIES:		
ACCOUNTS AND SUB-CONTRACTORS PAYABLE - SCHEDULE "A-6" *		$ 334 548 11
FEDERAL INCOME TAX ACCRUED AT NOVEMBER 30, 19x5		37 800 80
ACCRUED EXPENSES		20 726 21
NOTES PAYABLE - BANK		6 403 62
PAYROLL TAXES AND DEDUCTIONS WITHHELD		6 817 65
ADVANCE BILLINGS IN EXCESS OF RELATED CONTRACT COSTS - SCHEDULE "B-1"		4 333 34
DUE TO CUSTOMERS - SCHEDULE "A-7" *		17 796 64
DUE TO PROFIT SHARING TRUST		20 000 00
OFFICERS' SALARIES PAYABLE		37 200 00
TOTAL CURRENT LIABILITIES		$ 487 684 37
LONG-TERM LIABILITIES:		
LOANS PAYABLE - OFFICERS		44 131 98
TOTAL LIABILITIES		531 816 35
CAPITAL:		
CAPITAL STOCK - ISSUED AND OUTSTANDING	$ 75 000 00	
RETAINED EARNINGS	234 379 28	
TOTAL		309 379 28
TOTAL LIABILITIES AND CAPITAL		$ 841 195 63

NOTE: THE ATTACHED LETTER IS AN INTEGRAL PART OF THIS FINANCIAL STATEMENT.

* SCHEDULES REFERRED TO ARE NOT REPRODUCED.

FIGURE 2.6 BALANCE SHEET BASED ON PERCENTAGE-OF-COMPLETION METHOD [29]

CHAPTER 3

CONTRACTOR RELATIONS WITH THE SURETY

CHAPTER 3

CONTRACTOR RELATIONS WITH THE SURETY

3.1 INTRODUCTION

The objectives of this chapter are:

(i) to describe the nature of the relationship between the contractor and the surety (section 3.2);

(ii) to identify and document the information requirements and assessment procedures of the surety with respect to:
- establishing an initial relationship with the contractor, an initial bonding capacity and maintaining this relationship (sections 3.3.1 and 3.3.2);
- obtaining bonding for a specific project (section 3.3.3);
- increasing the bonding capacity of the company (section 3.3.4); and

(iii) to identify the strengths and weaknesses of current reporting practices of contractors from the viewpoint of the surety (section 3.4).

The major benefits to be derived from the attainment of these objectives is that a basis, although not complete, will exist for determining what and, to a certain extent, how improvements should be made in the firm's management practices and strengths in general and in the present internal and external reporting practices of the contractor in particular. These improvements would be directed at enhancing the contractor's

relationship with the surety and his internal project control practices.

The methodology employed to attain the objectives previously stated consisted of an extensive review of the literature coupled with in-depth interviews of key personnel associated with three major North American surety companies. This chapter was strengthened considerably by the contributions of these individuals.

3.2 THE ROLE OF THE SURETY

Because of the risks inherent in construction and the potential for error, the owners of projects require some form of assurance that a contractor, if awarded a contract, will initiate work on a project and, once work is started, that he will follow through to completion and honour all commitments to suppliers and labour. This assurance in many cases is provided by a surety who, as a third party, agrees to indemnify the owner, called the obligee, against any default or failure on the part of the contractor, called the principal. The assurance is issued in the form of one or more bonds which set forth the conditions under which the surety is liable and the extent to which it is liable (face value of the bond). The premiums for these bonds are paid directly by the contractor, although the premium is included in the contract price and hence the client pays indirectly. It must also be recognized that these bonds are different than insurance, in that the contractor is required to sign an indemnity agreement in

favour of the surety whereby he agrees to reimburse the surety for all charges incurred by the surety in its completion of the project.

As will be seen later, before a contractor can secure bonding from a surety company, his company must pass through a fairly rigorous examination with respect to its capacity, capital, character and cost control procedures.

Those contractors who successfully pass this examination process and who are subsequently bonded may be viewed as being pre-qualified by the surety from the viewpoint of the client, as the issuing of bonds by the surety may be viewed as an endorsement of the firm by the surety. Thus, by restricting his choice to bonded contractors, the owner has some assurance that he is dealing with one or more reputable contractors and the likelihood of default or failure on the part of the contractors is substantially diminished.

In fact, the surety views this pre-qualification process as its major function.

> ". . .Prequalification is our 'raison d'etre'. Every time we execute a bond we formalize that process by confirming that a business, or an individual, is capable of fulfilling an obligation whether it is under a contract, a license, a franchise or of whatever nature. If the surety is not a prequalifying

agency, then I don't know what we are. We are most certainly not in the insurance business although we are subject to the laws and the regulations which govern it. We may call our charge a premium when the term "fee" would be more appropriate. We do other things which confuse our clients, the general public, and even those in other responsibilities on our own companies. People relate our income to payments made under bonds when in fact, they should measure our performance by the volume of contracts successfully completed. Insurers we are not. We are, I submit, in the business of extending credit in support of a judgement decision -- that decision being of a prequalifying nature. . .the surety in executing its bond, says in effect to the owner: we have made a detailed analysis of this company, we have assessed its management and technical skills, we have studied its financial situation and we believe it is fully qualified in all respects to perform the contract in question. So sure are we of our judgement that we are prepared to back it up by committing our assets. No other form of prequalification is supported by that kind of financial commitment." [15]

In this role as a prequalifying agent, the surety may provide advice from time to time to the contractor on how

best it can attain its objectives and/or what steps should be taken to maintain control of the firm.

Other services extended by the surety to the contractor include acting as a credit reference service and as a contractor reference service, providing counseling with respect to certain projects, and with the bank, providing financial advice and providing financial guarantees or funds in time of need [16].

From the contractor's viewpoint, the main role of the surety is to provide bonding for specific projects he wishes to undertake. By obtaining bonding, the contractor is not required to provide guarantees to the owner in the form of cash deposits which would tie up much of his working capital and preclude the simultaneous undertaking of several jobs.

There are three basic bond types provided by the surety, these being bid bonds, performance bonds and labour and material payment bonds. The purpose of these bonds may be described as follows [16]:

Bid Bond: A bond which guarantees the difference between the low bid and the bid legally accepted by the obligee (subject to any stipulated maximum).

Performance Bond: The surety guarantees that the project will be completed within the stipulated time, in accordance with the specifications and free of any priviledge.

Labour and Material Payment Bond: The surety guarantees that once the project has been completed, it will belong to the owner, and not to creditors with rights on the completed work and that workers' wages and materials are paid for.

Figures 3.1, 3.2, and 3.3 depict typical formats used for the bid bond, performance bond and labour and material payment bond, respectively. Figure 3.4 illustrates a typical contract of indemnity agreement in which the contractor agrees to indemnify the surety should one or more of the bonds provided by the surety be invoked.

In summary, the surety provides an endorsement of the contractor in terms of bonding, in return for which he receives a premium and as agreement that he will be reimbursed by the contractor for all losses incurred on his behalf, should they occur. To receive his endorsement, the contractor must agree to have his firm undergo a rigorous examination whereby the surety seeks to assure itself that the firm is a sound business enterprise and has all the ingredients necessary for continued success.

3.3 ESTABLISHING AND MAINTAINING A WORKING RELATIONSHIP WITH THE SURETY

The purpose of this section is to examine in detail the processes by which the surety:

(i) determines that it is willing to underwrite a general contractor and sets an initial bonding capacity;

(ii) maintains a business relationship with the general contractor;

(iii) provides bonding for a specific project and monitors the progress of this project;

(iv) increases the bonding capacity for the contractor.

Attention is focused on the information that the contractor must provide for each of these processes and, in particular, on the manner in which the surety evaluates and uses this information in its decision-making process.

The information presented in this section was obtained from extensive interviewing of key personnel in the surety business as well as by an extensive review of the literature [15, 16, 19, 26, 33].

Figure 3.5 contains a letter which formed the basis for the interview process. Each interview was taped and then transcribed and where required, a follow-up interview was held. Excellent cooperation was received from three surety

companies. As will be seen in the sub-sections that follow, the surety business is largely one of judgement. The processes used by the surety cannot be formally stated in mathematical terms. At best, there are a few rules of thumb which are employed as guidelines but which are not binding on the surety.

3.3.1 Establishing a Relationship and Initial Bonding Capacity with the Surety

Before a contractor can receive bonding from a surety, it must undergo a thorough investigation by the surety. The so-called four C's -- Capacity, Capital, Character and Cost Control -- form the focus of this investigation. These terms may be defined as follows:

Capacity: The strength of the firm with respect to its personnel, its project experience and its plans for continuity.

Capital: The strength of the firm with respect to its financial performance over an extended time period and its relationship with its bank(s).

Character: The honesty and fairness of the firm in its dealings with others.

Cost Control: The accuracy with which the firm can estimate and its effectiveness in keeping project costs within budget.

The information required under these categories is not mutually exclusive, nor are the categories themselves. There is some question as to whether a fifth C should be added to those above, it being Conditions, which relates to labour conditions, material shortages, inflation, etc. In this report, conditions has not been treated in a manner similar to the other four C's, largely because they represent factors which are beyond the control of the contractor and because the surety has no mechanism of keeping current on all the items which come under this heading.

Tables 3.1 through 3.4 show the information sought by the surety with respect to the contractor's capacity, capital, character and cost control, respectively. The column headed Evaluation Criteria/Explanatory Notes in these tables attempts to demonstrate the manner in which the surety assesses the information gathered.

The form shown in Figure 3.6 is typical of those used by various surety companies to obtain basic information regarding the firm's capacity, capital, character and cost control. Supplmentary documents which must also be submitted include:

(i) Detailed resumes for all key personnel;

(ii) Equipment lease agreements, if applicable;

(iii) A letter from the bank setting forth the credit line available to the firm;

(iv) Financial statements for a specified number of years

(v) A Status of Uncompleted Work Report (Figures 3.7 and 3.8 illustrate typical formats).

The evaluation process employed by the surety is not a straightforward one in the sense that a comprehensive set of criteria are first established, information from the contractor is processed and scored against these criteria, these scores are then summed after being appropriately weighted and finally a yes-or-no decision is taken based on the total score being above some specified value. Rather, the process seems to be one of ensuring that certain fundamental ingredients are present (e.g., management capability, financial strength) and that a combination of strengths (both tangible and intangible) is present which both contains the weaknesses present and which provides the basis for a successful future. While there are certain quantitative aspects to this process, by and large it is one of judgement, and consequently it is impossible to set forth a prescription for the evaluation and decision-making process which is rigorously and rigidly adhered to. Hence, in the text that follows, emphasis is placed on the manner in which the surety views and evaluates certain items of information provided to him by the contractor or by firms and individuals who have had prior dealings with the contractor. Because much of the content of Tables 3.1 through 3.4 is self-explanatory, discussion is limited to

those items in the tables which are deemed to be of special importance. It is thought that the major benefit to be derived from the information contained in the tables and in the following discussion is that a basis will exist for the contractor to objectively examine his own firm for purposes of identifying its strenghts and weaknesses, to select objectives which are compatible with these strengths and to take action(s) designed to rectify existing weaknesses.

There seems to be no consensus among sureties as to the relative importance of the four C's. Each surety interviewed gave a different ranking. The three rankings obtained are as follows:

(i) (1) Capacity; (2) Character; (3) Capital; (4) Cost Control.

(ii) (1) Character; (2) Capacity; (3) Capital; (4) Cost Control.

(iii) (1) Capacity; (2) Capital; (3) Character; (4) Cost Control.

With respect to the second ranking (i.e., (ii)), the following comment was made;

> ". . .Character to start off with. If a person is not honest, I don't care how much money he may have, he is not a risk we can bond. I have had people come in here and say 'I have a $200,000 job and I'm being asked for a $200,000 bond guaranteeing that I will do the job and here is $200,000 cash to guarantee the

job.' I turned down the bond, because in my investigation of the company, I determined that the people who were behind the company were not honest."

What did emerge as an overriding concern among sureties was the strength of management in terms of its depth, plans for continuity and clearly-defined objectives for the future. The fact that the continued success of many construction firms hinges on the continued health and well-being of one key individual is of primary concern to the surety and makes difficult the task of the surety. The onus is on the contractor to demonstrate that a mechanism for continuity exists in case this individual is removed (for whatever reason) from the scene.

Also included in the evaluation of depth is the strength of second-line management (project managers, engineers, job superintendents, foremen) with respect to their work experience, and time spent working together. Of importance to the surety is whether the contractor recognizes the strengths and weaknesses of each of his employees and has built his staff, to the extent that he is able, so that collectively no key strengths required for the type of work he wishes to undertake are missing.

Considerable effort is spent on evaluating the financial performance of the firm. Of greatest importance to the surety are the trends in financial performance that have occurred over the last three or four years and the current status of

ongoing jobs. ". . .unfinished construction contracts hold the key to the true financial position of the contractor." [33]. In order to assess the trends previously mentioned, it is important that financial statements submitted by the contractor be made up on a basis consistent with those of the preceding year. "This is of vital importance to us because one of the mainstays of any financial analysis is the practice of company balance sheets over a period of years. It is a fact that the differences or changes between statement dates are of more significance to us than the indicated dollar position of any one statement.

"Therefore any single balance sheet does not tell us very much. However, if two or more year-end statements are set up for comparison and provided they are prepared on the same accounting bases, the difference exhibited between dates will be of great significance.

"This is the reason we like to obtain audited complete financial reports for at least the past four years. We then do a comparison of basic financial data from these reports and we use a comparative analysis form or some similar type of form which reveals the differences or changes. We do this not only for the balance sheet but the income statement as well, comparing the gross profit, overhead expense, federal taxes and their net income." [19].

Figure 3.9 shows a financial recap sheet or comparative analysis form used by one of the sureties interviewed.

Various financial ratios are computed as part of the analysis procedure, but the surety does not attach overwhelming importance to them, although some attention is given to how they have varied with time and how they compare to values derived from the evaluation of similar companies.

It should be noted that the computation of the various ratios is based on figures derived by the surety. For example, current assets may be reduced because accounts receivable which have been outstanding for a long time may be written off as bad debts. The surety might also include in current liabilities, deferred income taxes, regardless of the accounting method employed by the contractor's accountant. This is done even though the surety realizes that these taxes will not be paid over the next year.

With respect to the method of accounting used, by the contractor or his accountant, its choice will influence ". . . evaluating results, future planning, income taxes to be paid, bonding company relationships, credit with suppliers, and even ability to obtain contracts." [25]. Of four accounting methods that could be used, viz. cash method, accrual method, percentage of completion method and completed contract method, the last two are acceptable to the surety, with the percentage of completion method being the preferred

one, partly because its use implies at least some minimal level of project cost control.

Additional information sought by the surety because of the inherent limitations of financial statements include answers to the following questions:

(a) Has the company set up reserves for:
- Depreciation on fixed assets
- Reserve for taxes
- Bad debts
- Other contingencies

(b) Does the company have the necessary funds to replace and purchase the required machinery and equipment?

(c) Has the income tax department examined the company's federal income tax return? What years were examined?

(d) Does the firm have any long-term debts coming due shortly? What are the plans for refunding them?

(e) Are there any undisclosed liabilities or renewals or contingent liabilities? (i.e., lawsuits on patents or infringements, or suits by government).

The following comments were made by one surety with respect to the process used by his company in assessing a contractor's balance sheet.

". . .Inter-company loans we normally put as a long-term asset rather than a current asset. If we did

have an inter-company receivable we would want to have a statement of the affiliate or subsidiary. The same for notes receivable -- when are they due, how can they be discounted? Material to be incorporated into work ahead -- we also interpret that partly as inventory, depending on the type of contractor that we are dealing with. Normally, what goes in here will be inventory to be used on work on hand, on the jobs he has. He may have purchased materials -- for instance, a water and sewer contractor may show an inventory item for sewage pipe which he has bought before the job has commenced or is commencing but he hasn't laid the pipe yet -- so that is inventory for him, which in turn will become part of the job as he does it. So we would allow for that. . .One thing we will not allow as a short-term item unless we know it will be liquidated in a short period of time is land held for speculation. You have real estate in here of course, and land, buildings, and what-not. On the conservative side, we will allow the book value, say we know on the books it's worth $50 thousand, but in the back of our minds we know it's going to sell for $150 thousand.

". . .Briefly, looking at the liabilities side, we look to see what is going into the bank in terms of the operating line of credit. In that area, we are all aware that we have to use the banks to maintain payables and so forth, but we don't like to see a firm dependent

upon the bank. So here is another area which we explore, we meet with the bank manager and discuss the overall account and review their operations. They take out the ledger sheet, or whatever it is they call it, the loan sheet and say: 'Alright, he's got a line of credit of one hundred thousand dollars, what are his borrowings?' Then you see if he is always owing the bank a hundred thousand dollars, well, then he's got a problem. He's dependent upon the bank. The minute they decide to pull the plug, here he goes.

". . .Equipment notes -- if he had purchased equipment, what are his current commitments on that equipment. Again, we like to look at this -- will he be able to meet them? Because he has to maintain a certain amount of work flow to meet these payments. Again in that area one thing that we endeavour to look into or inquire about is the type of financing contract that that contractor has with the equipment dealer. You have some contracts that, the minute they miss a payment, the whole amount is due. Sometimes they will allow a period of three-months' grace, let's say during the winter-time, if they know there's no work and he can't make the payment. We like to look into these things and see the impact they may have.

"Other notes payable -- it may be John Doe owing $10,000 to his grandmother or something like this. This is

to maintain a certain amount of work just to break even. So we will look at that as well. . .In other words, we don't want to give him too much rope to go and hang himself. Then again, we don't want to hold him back if he's got growth and potential."

[(Q). . ."Do you use a formula to come up with the amount of coverage?"]

(A) ". . .We don't work that way. We do not set limits. We say that we want to deal with responsible people and if we deal with responsible people, responsible people will not tend to overextend themselves. They themselves will set their own limits."

[(Q). . ."Do you have any rules you apply in defining the maximum amount of money of coverage that you can give to the contractor from the balance sheets?"]

(A) "No. We base our decision on the financial statement. We want them to be in good financial standing, not too much long-term debt, depending on if it's a road-builder or a building contractor. We take into account the working capital but we have no number, no ratio, no magic ratio. We use judgement. We're in a business of judgement."

3.3.2 Maintaining a Relationship with the Surety

The contractor once having received bonding from the surety, is required to submit reports on a regular basis to the surety. These reports provide information on both the overall financial performance of the firm as well as on jobs in progress, and include:

(i) A schedule of work in hand, submitted on a quarterly basis;

(ii) An interim balance sheet, submitted semi-annually;

(iii) An audited financial statement, submitted annually;

(iv) Job status reports, obtained both from the contractor and the project owner.

The procedure used to assess the information contained in these reports is similar in nature to that used to assess the firm for underwriting.

The success of the relationship between the contractor and the surety is determined, in large part, by the degree of openness or candour which characterizes the relationship. It is important that the contractor have sufficient confidence in the relationship that he is willing to discuss with the surety any problems which may impact on the success of the company. If the surety "... only hears about your problems through the grapevine, chances are that it will not be well-disposed toward you." [16].

3.3.3 Obtaining Bonding for a Specific Project

The bonding of a specific project may be viewed as being comprised of three specific phases, viz., arranging bonding, monitoring job progress and project completion.

In the first phase, attention is focused on the details of the specific project to be bonded, the present status of on-going work for the contractor, and his experience with previous projects which are similar in nature to the one to be bonded. Figure 3.10 depicts a typical application form for contract bond and agreement of indemnity. Of interest to the surety is the extent of its potential liability (kinds and amounts of bonds required), the specifics of the contract itself, as set forth in the contract documents (required completion date, penalty clauses for delay, terms of payment, escalation clauses, holdbacks, etc.), the identity of the owner, information regarding other bids (obtained after the issue of the bid bond), and the requirements for bonding of the sub-contractors and the identity of the sub-contractors. Other information required pertains to the present status of other on-going projects (contract price, percentage completed, type of construction, etc.), and other jobs which currently are being bid. (One problem facing the surety is that the contractor can succeed in receiving two or three new jobs almost simultaneously, which in combination with on-going work surpass his present bonding capacity and his ability to manage.) A substantial amount of

the information required by the surety is used to update the information submitted by the contractor in the initial underwriting phase. It must be remembered that the surety is, in fact, underwriting a complete organization, and not just bonding a specific project, and hence before it can provide bonding for a new project the overall capability and performance of the firm must be reviewed, with the rigour of this review process being determined somewhat by how close the contractor's on-going and proposed new work is to his present bonding capacity. The rigour of the review process is also governed by the relationship of the project to be bonded to previous projects in terms of type, size, complexity and management expertise required. To minimize risk, the surety would like the contractor to stay with the kind of work with which he is most experienced. If the contractor wants to change areas, the surety wants him to undertake only small jobs in this new area at first, until he gains the necessary experience required for larger jobs. As an alternative, the contractor may be encouraged to collaborate by way of a joint venture with a contractor experienced in this type of work.

> ". . .Many Canadian, American and Quebec firms have disappeared on account of one single project. If equipment is your speciality and the project is one where techniques are most important, or vice-versa, would you not be wiser to find yourself a good partner and to form a joint venture with him for that

project? A 50 percent profit is preferable to a 100 percent loss." [16].

Some of the comments made by the sureties interviewed in regard to the decision of whether or not to provide bonds for a specific project were as follows:

". . .We wouldn't want to see a general building contractor going into water and sewer work all of a sudden. You know on paper he may have the working capital for it, but not the expertise, nor the equipment. Also, why jump all of a sudden from, say, a one million dollar contract to one of five million or ten million? Just because he's been building for twenty years doesn't mean he's going to be able to build Place Ville Marie. In regard to projects obtained on major contracts completed, it's all very nice to say I've completed a five million dollar job, but if I've lost a million dollars, what's the point? We want to see the bid spread, both on the current job and ones he's bid in the past. We like a bid spread within 20%. You have to be familiar with the trade, itself, and how hungry the contractors are in order to pass judgement on the bid spread. Sometimes it'll scare you."

". . .We'd like to know the amount of holdback, if there is any liquidated penalties or damages, when the project is going to end, what is his present uncompleted work. And we will add this on. So if he

has $500,000 left of work to do on the 2 million dollars work that he had before this job and he estimates this new job at one and a half million, then, theoretically, we are back to 2 million dollars uncompleted. Since we have followed 2 million dollars before, we will follow again. If we go beyond that -- if it happens to be a different type of work, slightly larger size job, then we will start looking into the scope of the work, duration, etc., and evaluate that. We'll also look at the sub-trades on the job, materials required, equipment needs, the location of the work, etc. These are important factors as well."

Once a project is bonded, the surety will visit the job site from time to time to assess the progress of the project. It receives formal reports from the contractor in the form of the Contract Status Report (Figures 3.7 and/or 3.8) which is submitted on a quarterly basis. On a regular basis the surety will request that the owner complete a Contract Status Report (Figure 3.11) which confirms what has been paid to date, the amount of work completed to date and if the project has been accepted, when accepted.

". . .While the project is in progress, we have a system where we write to the owner every 3 or 6 months and ask him how the job is progressing and are there any problems from his point of view. We keep in contact this way. Sometimes we get discrepancies in opinion. There's a form, a standard

form, and there is a place for remarks and comments. And usually, if there's anything minor, it will be stated on this form. But if it's something major, they will write to us directly. Or sometimes, if a supplier is not paid, he will write to us directly.

"If it's a major problem, we'll call them and see what the dispute is and we'll call the contractor and find out his version. But we in no way want to become a judge or a jury in the dispute. We try to get the parties together, and come to a settlement."

The surety will close the file when it receives a contract status report from the owner stating that the job has been completed and accepted. This form also documents the final contract price, which is used to determine the exact amount of the premium to be paid by the contractor.

3.3.4 Increasing the Bonding Capacity

The bonding capacity of a contractor can increase in one of two ways. First, it may increase by small increments (with respect to its current capacity) at a time (say, half a million dollars), in which case a formal review by the surety may not be undertaken. The other way that the capacity will be increased is because the contractor wishes to undertake a major new job and he is able to convince the surety that he is capable of doing it along with his current workload. In this case, the surety will reassess the contractor in terms

of the four C's, Capacity, Capital, Character and Cost Control, as described in section 3.3.1. Central to this reassessment process is a clear articulation by the contractor of his objectives, how he intends to achieve any required changes in his organization, his current financial status, his experience with jobs of a similar nature, etc. The review process used by the surety varies from company to company. In this regard, the following comment was made.

> ". . .Some companies work this way, where they say after six months we review completely and either increase or decrease the bonding capacity by increments of half a million dollars or something like this. We'd rather adopt an approach whereby we ask, 'What do you need, why do you need it and how can be go about it?' We find that this approach can be mutually satisfying. It gives us a chance to examine his objectives, the cash flow aspect, the management aspect, the type of work, etc."

3.4 NEED FOR IMPROVEMENT OF CONTRACTOR'S REPORTING PRACTICES -- THE SURETY'S VIEWPOINT

An attempt was made to determine, from the viewpoint of the surety, what weaknesses exist in the present information-gathering and reporting practices of the contractor. The following aspects of these practices were singled out for

attention by the sureties interviewed.

(i) Better Overall Planning for the Future

Companies should undertake cash flow planning for purposes of selecting the type and size of jobs they should go after, and when they should attempt to undertake these jobs.

(ii) Better Cost Control Reporting System

Contractors need a system which provides data accurately and quickly regarding job progress, a means of comparing this job progress information with planned job progress information and a means of forecasting what the outcome of the project will be, given the performance to date and any corrective actions which have been adopted.

> ". . .I would want a contractor to have improved cost records for two reasons. First, to tell him, not necessarily on a daily basis but maybe a weekly basis and very definitely on a monthly basis this is where he stands with his various jobs. Second, to know if he is improving the original cost of the estimator or is he deteriorating the profit -- either way, he must know why because while he is executing jobs, he is also bidding new jobs and the cost records of the old jobs will tell us when he has saved money and where he has produced at a better speed with respect to the original plan. Then, when another similar

job comes along, he will know where to make price adjustments so he will not lose money if he is awarded the contract. With these records he will be able to produce improved financial statements, maybe on a quarterly basis, not necessarily audited, but sure enough figures so that he can make administrative decisions based on them."

". . .Depending on the size of the company, they could introduce computers to give better accounting of their cost for each different job. . .The faster he knows where he's at, the better it is."

(iii) More Financial Information

". . .The main thing for a contractor is not to be afraid of opening his books. He must trust us. You know we have contractors that give us rough financial statements on a monthly basis with all details -- that creates confidence. They have confidence in us and they know we keep these things on a very confidential basis. . .It creates a better climate."

3.5 SUMMARY

Of all the actors in the contractor's universe other than the contractor himself, the surety, because of its role vis-a-vis the contractor, is the most knowledgeable of them

in regard to the combination of strengths and weaknesses which characterize the firm's total set of management practices as well as its personnel. An attempt has been made in this chapter to document the manner by which the surety determines these strengths and weaknesses in the various phases of its relationship with the contractor. Thus, a basis exists, at least in part, for determining what and, to a certain extent, how improvements should be made in the firm's management practices and strengths in general and in the present internal and external reporting practices of the contractor in particular. Providing this basis was the goal of this chapter.

It is clear that, with respect to the reporting practices of the contractor, there is a need for information systems which can produce accurate and complete information on a timely basis. The nature of these systems will vary from contractor to contractor and will depend on the nature and volume of operations, the organization and operating procedures of the firm and the personnel needs and desires of management. Exphasis must be placed on the accuracy and completeness of the data input to the system and the information output from it.

> ". . .Cost records of the highest quality are vital to the continuation of a profitable business. Any contractor or accountant who claims inability to furnish a realistic explanation of his position

on unfinished work or who does not for any reason include sufficient detail in the financial reports to permit intelligent analysis in most instances will effectively prevent us from performing our function as a surety company." [19].

Improved control of the firm's activities can in part be achieved by producing accurate and timely cash flow forecasts for individual projects and for the firm as a whole, job progress reports, cost reports for estimating future projects, financial statements, etc. The need for more information, both for use by the contractor and by external parties is likely to increase.

The demands for information relating to the contractor's activities have evolved ". . .from simple analysis in the 50's to more complex statements in the 60's to supporting work schedules of the 70's." In the future, ". . .the next step might be to ask for flow projections on contracts. . ." [19].

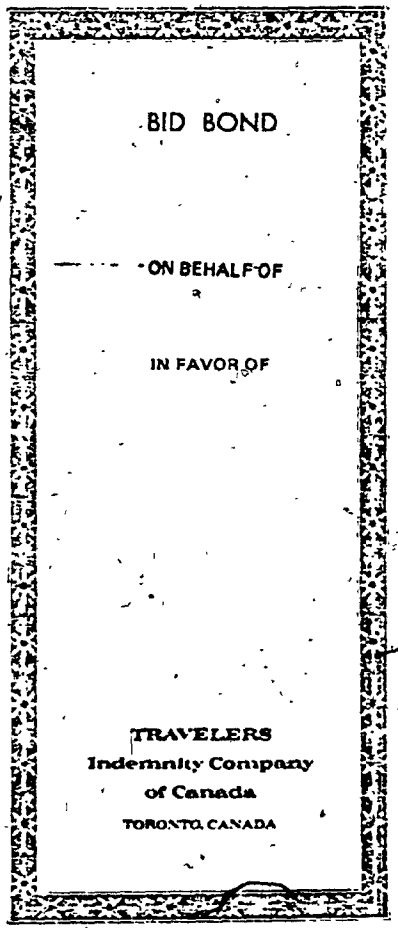


FIGURE 3.1A BID BOND

TRAVELERS Indemnity Company of Canada — TORONTO, CANADA

No. .....

BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT .....

.....

as Principal, hereinafter called the Principal, and TRAVELERS Indemnity Company of Canada, a corporation created and existing under the laws of Canada and duly authorized to transact the business of Suretyship in the Province of ..... as Surety, hereinafter called the Surety, are held and firmly bound unto ..... as Obligee, hereinafter called the Obligee, in the amount of .....

..... Dollars ($ .....)

lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a written tender to the Obligee, dated the ..... day of ..... 19 ..., for .....

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal shall have the tender accepted within sixty (60) days from the closing date of tender and the said Principal will, within the time required, enter into a formal contract and give the specified security to secure the performance of the terms and conditions of the Contract, then this obligation shall be null and void, otherwise the Principal and the Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former.

The Principal and the Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of six months from the date of this Bond.

IN WITNESS WHEREOF, the Principal and the Surety have Signed and Sealed this Bond this ..... day of ..... 19 .....

SIGNED and SEALED
In the presence of

.....

.....

.....

.....

TRAVELERS INDEMNITY COMPANY OF CANADA

By .....
Attorney-in-fact

SS 1911 Rev. 4 74 Printed in Canada (Approved by the Canadian Construction Association)

ENDORSED BY: R.A.I.C., A.C.I.C., C.C.A., E.I.A., S.W.A.C. APPROVED BY: INSURANCE BUREAU OF CANADA

FIGURE 3.1B BID BOND

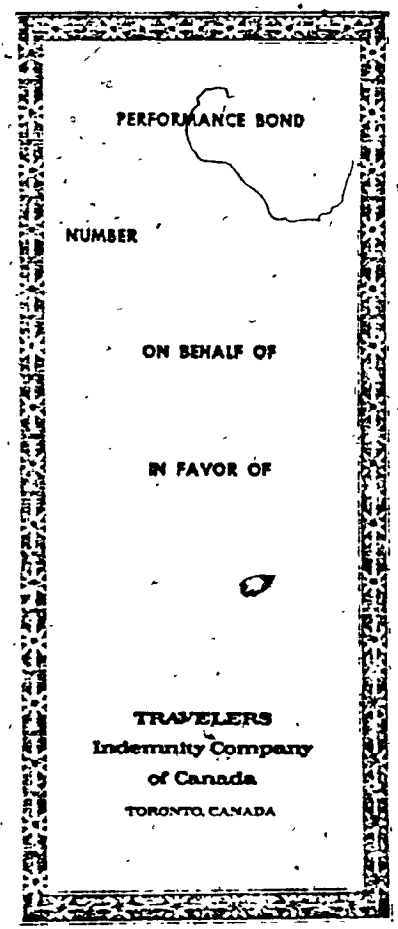


FIGURE 3.2A PERFORMANCE BOND

TRAVELERS Indemnity Company of Canada. TORONTO, CANADA

No._____

PERFORMANCE BOND

(Approved by the Canadian Construction Association)

KNOW ALL MEN BY THESE PRESENTS, that .....

.....as Principal, hereinafter called the Principal, and TRAVELERS Indemnity Company of Canada, a corporation created and existing under the laws of Canada and duly authorized to transact the business of Suretyship in the Province of .....

as Surety, hereinafter called the Surety, are held and firmly bound unto .....

..... as Obligee, hereinafter called the Obligee, in the amount of .....

..... Dollars ($ .....)

Lawful money of Canada, for the payment of which sum well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a written contract with the Obligee, dated the .....

day of .....19....., for .....

.....

In accordance with the Specifications and Drawings submitted therefor which contract, Specifications and Drawings, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly and faithfully perform the Contract then this obligation shall be null and void, otherwise it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Obligee to be, in default under the Contract, the Obligee having performed the Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall promptly

(1) complete the Contract in accordance with its terms and conditions or

(2) obtain a bid or bids for submission to the Obligee for completing the Contract in accordance with its terms and conditions, and upon determination by the Obligee and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder the amount set forth in the first paragraph hereof. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount payable by the Obligee to the Principal under the Contract, less the amount properly paid by the Obligee to the Principal

Any suit under this Bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Obligee named herein, or the heirs, executors, administrators or successors of the Obligee.

IN WITNESS WHEREOF, the Principal and the Surety have signed and sealed this Bond this ..... day of

.....19.....

.....
Principal

.....

TRAVELERS Indemnity Company of Canada

By .....
Attorney-in-Fact

VS 1941 Rev. 8 72 Printed in Canada (Approved by the Canadian Construction Association)

Endorsed by: B.A.I.C., A.C.L.C., C.C.A., E.I.C., S.W.A.C. Approved by: INSURANCE BUREAU OF CANADA

FIGURE 3.2B PERFORMANCE BOND

TRAVELERS Indemnity Company of Canada. TORONTO, CANADA

LABOUR AND MATERIAL PAYMENT BOND

(Trustee Form)

Note: This Bond is issued simultaneously with another Bond in favour of the Obligee conditioned for the full and faithful performance of the Contract.

KNOW ALL MEN BY THESE PRESENTS THAT .....

.....as Principal,

hereinafter called the Principal, and TRAVELERS Indemnity Company of Canada, a corporation created and existing under the laws of Canada and duly authorized to transact the business of Suretyship in the Province of .....

as Surety, hereinafter called the Surety are, subject to the conditions hereinafter contained, held and firmly bound unto

.....as Trustee,

hereinafter called the Obligee, for the use and benefit of the Claimants, their and each of their heirs, executors, administrators, successors and assigns, in the amount of .....

..... Dollars ($ .....)

of lawful money of Canada for the payment of which sum well and truly to be made the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a written contract with the Obligee, dated the .....

day of .....19....., for .....

.....

.....

.....

which contract, Specifications & Drawings are by reference made a part hereof, and is hereinafter referred to as the Contract

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall make payment to all Claimants for all labour and material used or reasonably required for use in the performance of the Contract, then this obligation shall be null and void, otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A Claimant for the purpose of this Bond is defined as one having a direct contract with the Principal for labour, material, or both, used or reasonably required for use in the performance of the Contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment directly applicable to the Contract provided that a person, firm or corporation who rents equipment to the Principal to be used in the performance of the Contract under a contract which provides that all or any part of the rent is to be applied towards the purchase price thereof, shall only be a Claimant to the extent of the prevailing industrial rental value of such equipment for the period during which the equipment was used in the performance of the Contract. The prevailing industrial value of equipment shall be determined, insofar as it is practical to do so, in accordance with and in the manner provided for in the latest revised edition of the publication of the Canadian Construction Association titled "Rental Rates on Contractors Equipment" published prior to the period during which the equipment was used in the performance of the Contract.

2. The Principal and the Surety, hereby jointly and severally agree with the Obligee, as Trustee, that every Claimant who has not been paid as provided for under the terms of his contract with the Principal before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labour was done or performed or materials were furnished by such Claimant, may as a beneficiary of the trust herein provided for, sue on this Bond, prosecute the suit to final judgment for such sum or sums as may be justly due to such Claimant under the terms of his contract with the Principal and have execution thereon. Provided that the Obligee is not obliged to do or take any act, action or proceeding against the Surety on behalf of the Claimants, or any of them, to enforce the provisions of this Bond. If any act, action or proceeding is taken either in the name of the Obligee or by joining the Obligee as a party to such proceeding, then such act, action or proceeding shall be taken on the understanding and basis that the Claimants, or any of them, who take such act, action or proceeding shall indemnify and save harmless the Obligee against all costs, charges and expenses or liabilities incurred thereon and any loss or damage resulting to the Obligee by reason thereof. Provided still further that, subject to the foregoing terms and conditions, the Claimants, or any of them, may use the name of the Obligee to sue on and enforce the provisions of this Bond.

YB-1942 (Rev. 8-72) Printed in Canada

FIGURE 3.3A LABOUR AND MATERIAL PAYMENT BOND

4. No suit or action shall be commenced hereunder by any Claimant:

(a) unless such Claimant shall have given written notice within the limits hereinafter set forth to each of the Principal, the Surety and the Obligee, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal, the Surety and the Obligee, at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the Contract is located. Such notice shall be given

(1) in respect of any claim for the amount or any portion thereof, required to be held back from the Claimant by the Principal, under either the terms of the Claimant's contract with the Principal; or under the Mechanics' Liens Legislation applicable to the Claimant's contract with the Principal, whichever is the greater, within one hundred and twenty (120) days after such Claimant should have been paid in full under the Claimant's contract with the Principal,

(2) in respect of any claim other than for the holdback, or portion thereof, referred to above, within one hundred and twenty (120) days after the date upon which such Claimant did, or performed, the last of the work or labour or furnished the last of the materials for which such claim is made, under the Claimant's contract with the Principal,

(b) after the expiration of one (1) year following the date on which the Principal ceased work on the Contract, including work performed under the guarantees provided in the Contract,

(c) other than in a Court of competent jurisdiction in the Province or District of Canada in which the subject matter of the Contract, or any part thereof, is situated and not elsewhere, and the parties hereto agree to submit to the jurisdiction of such Court.

5. The Surety agrees not to take advantage of Article 1959 of the Civil Code of the Province of Quebec in the event that, by an act or an omission of a Claimant, the Surety can no longer be subrogated in the rights, hypothecs and privileges of said Claimant.

5. The amount of this Bond shall be reduced by, and to the extent of any payment or payments made in good faith, and in accordance with the provisions hereof, inclusive of the payment by the Surety of Mechanics' Liens which may be filed of record against the subject matter of the Contract, whether or not claim for the amount of such lien be presented under and against this Bond.

6. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact this ... day of ..., 19...

.....

.....

TRAVELERS Indemnity Company of Canada

By.....
Attorney-in-Fact

FIGURE 3.3B LABOUR AND MATERIAL PAYMENT BOND

Aetna Life & Casualty

GENERAL CONTRACT OF INDEMNITY

THE ÆTNA CASUALTY AND SURETY COMPANY
Hartford, Connecticut 06115

We, the undersigned hereinafter referred to as Indemnitors, hereby request THE ÆTNA CASUALTY AND SURETY COMPANY, hereinafter referred to as Ætna, to furnish instruments of suretyship, hereinafter referred to as Bonds, and as an inducement therefor we make the following representations of fact, promises and agreements:

REPRESENTATIONS OF FACT:

A. In the transaction of business one, some or all of the Indemnitors are required, or may desire, to give such Bonds.

B. The Indemnitors and each of them have a substantial and beneficial interest in the giving of such Bonds.

PROMISES AND AGREEMENTS: In consideration of the furnishing of any such Bond by Ætna and for other valuable consiederations the Indemnitors hereby jointly and severally promise and agree as follows:

1. To pay all premiums for each such Bond as they fall due and until Ætna has been provided with competent legal evidence that the Bond has been exonerated and discharged.

2. To indemnify and exonerate Ætna from and against any and all loss and expense of whatever kind, including interest, court costs and counsel fees, hereinafter referred to as Loss, which it may incur or sustain as a result of or in connection with (1) the furnishing of any Bond, (2) the enforcement of this agreement. To this end Indemnitors promise:

   (a) To promptly reimburse Ætna for all sums paid on account of such Loss and it is agreed that (1) originals or photocopies of claim drafts, or of payment records kept in the ordinary course of business, including computer printouts, verified by affidavit, shall be prima facie evidence of the fact and amount of such Loss, (2) Ætna shall be entitled to reimbursement for any and all disbursements made by it in good faith, under the belief that it was liable, or that such disbursement was necessary or expedient.

   (b) To deposit with Ætna on demand the amount of any reserve against such Loss which Ætna is required, or deems it prudent to establish, whether on account of its actual liability or one which is or may be asserted against it, and whether or not any payment for such Loss has been made.

3. This agreement shall apply to Bonds furnished as follows:

   (a) By the Ætna as surety, or where procured by Ætna, by any other surety or co-surety, in which event such surety or co-surety shall also have the benefit of this agreement and the right to proceed thereon.

   (b) For or on behalf of any of the following:

   (1) One, some or all of the Indemnitors.

   (2) Any joint venture or other form of common enterprise in which at the time the bond was furnished, such Indemnitor or Indemnitors was a member.

   (3) Any present or future affiliate or subsidiary of such Indemnitor or Indemnitors.

   (c) At any time before this agreement shall have been terminated, including any Bond or Bonds which may have been furnished before the date hereof.

4. The validity and effect of this General Contract of Indemnity shall not be impaired by, Ætna shall incur no liability on account of, and the Indemnitors need not be notified of:

   (a) Ætna's failure or refusal to furnish any Bond, including final bond or bonds where Ætna has furnished a bid bond.

   (b) Ætna's consent or failure to consent to changes in the terms and provisions of any Bond, or of the obligations or performance secured by any Bond.

   (c) The taking, failing to take, or release of security, collateral, assignment, indemnity agreements and the like, as to any Bond.

   (d) The release by Ætna, on terms satisfactory to it, of any of the Indemnitors.

   (e) Information which may come to the attention of Ætna which affects or might affect its rights and liabilities or those of the Indemnitors or any of them.

FIGURE 3.4A TYPICAL GENERAL CONTRACT OF INDEMNITY AGREEMENT

(If Indemnitor an Individual, sign below)

Witness' signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness' signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness' signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness' signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness' signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

Witness signature _____ (I. S.)
(Print or type name) (Individually) (Print or type name)

(If Indemnitor a Partnership, sign below)

_____
(Name of Partnership)

Witness signature _____ Partner's signature _____ (I. S.)
(Print or type name) (Print or type name)

Witness signature _____ Partner's signature _____ (I. S.)
(Print or type name) (Print or type name)

FIGURE 3.4B TYPICAL GENERAL CONTRACT OF INDEMNITY AGREEMENT

5. Provided, however, that each Indemnitor reserves the right to terminate his participation in this agreement as a continuing request to Ætna for the furnishing of Bonds, upon written notice to Ætna of not less than twenty days, whereupon the obligations and liability of an Indemnitor giving such notice shall be limited to those Bonds furnished before the effective date of the notice.

WE HAVE READ THIS INDEMNITY AGREEMENT CAREFULLY. THERE ARE NO SEPARATE AGREEMENTS OR UNDERSTANDINGS WHICH IN ANY WAY LESSEN OUR OBLIGATIONS AS ABOVE SET FORTH.

WITNESS: The following signature(s) and seal(s) this ______ day of ______, 19__.

IMPORTANT: The Signature of each and every party to this instrument must be witnessed by at least one disinterested person.

	______________________ (Corporate name)
Attest ______________________ (Print or type Name and Title)	By ______________________ (Seal) (Print or type Name and Title)
	______________________ (Corporate name)
Attest ______________________ (Print or type Name and Title)	By ______________________ (Seal) (Print or type Name and Title)
	______________________ (Corporate name)
Attest ______________________ (Print or type Name and Title)	By ______________________ (Seal) (Print or type Name and Title)
	______________________ (Corporate name)
Attest ______________________ (Print or type Name and Title)	By ______________________ (Seal) (Print or type Name and Title)
	______________________ (Corporate name)
Attest ______________________ (Print or type Name and Title)	By ______________________ (Seal) (Print or type Name and Title)
	______________________ (Corporate name)
Attest ______________________ (Print or type Name and Title)	By ______________________ (Seal) (Print or type Name and Title)

FIGURE 3.4C TYPICAL GENERAL CONTRACT OF INDEMNITY AGREEMENT

CERTIFIED COPY OF RESOLUTION

At a regular/special meeting of the Board of Directors of

duly called and held on the day of ,19
a quorum being present, the following Resolution was adopted.

"WHEREAS, this Company is materially interested in the transaction(s) on which (1)

has applied or will apply to THE ÆTNA CASUALTY AND SURETY COMPANY for bond(s) or undertaking(s); and

WHEREAS, THE ÆTNA CASUALTY AND SURETY COMPANY has executed or is willing to consider the execution of such bond(s) or undertaking(s), as surety, upon being furnished with the written indemnity of this Company;

THEREFORE BE IT RESOLVED, that (2)

of the Company be and hereby is (are) authorized to execute on behalf of the Company, any agreement or agreements of indemnity required by THE ÆTNA CASUALTY AND SURETY COMPANY as a prerequisite to the execution by it of the bond(s) or undertaking(s) for (1)

in connection with the matter(s) or transaction(s) described in the agreement of indemnity required by said THE ÆTNA CASUALTY AND SURETY COMPANY, and the proper attesting officer of the Company be and hereby is authorized to affix the corporate seal to such agreement or agreements of indemnity and subscribe his name thereto, attesting the same."

I, Secretary of

have compared the foregoing Resolution with the original thereof, as recorded in the Minute Book of said Company, and do certify that the same is a correct and true transcript therefrom and of the whole of said original Resolution.

Given under my hand and seal of the Company

in the City of

State of

this day of ,19

Secretary

(1) Insert name and address of Principal or Applicant.

(2) Insert name and title of officer(s).

FIGURE 3.4D TYPICAL GENERAL CONTRACT OF INDEMNITY AGREEMENT

(514) 879-8014

Dear Sir:

Currently underway within the Centre for Building Studies at Concordia University is a research project which has as its focus the development of improved management information systems for the general contractor, improved in the sense that they:

(i) optimize the use of information presently available to the firm;
(ii) are compatible with the manner in which the firm operates and with the skills of existing personnel;
(iii) report the correct and necessary information in a form which can best be interpreted by management, and at a level of detail most appropriate for the individual managers or supervisors who will be using this information;
(iv) get this information to the appropriate managers and supervisors both at the time required and the frequency required;
(v) enhance the relationship between the contractor and his banker, surety, and clients.

Of greatest importance to us at this time is your assessment of the strengths and weaknesses of present reporting practices of contractors as regards the surety.

In regard to item (v) above, we are seeking information regarding the evaluation processes employed by the surety for:

- Determining the initial bonding capacity of the general contractor;
- Providing bonding for a specific project and monitoring the progress of this project;

...../2

FIGURE 3.5A LETTER USED IN INTERVIEWS

- Maintaining a business relationship with the general contractor;
- Increasing the bonding capacity for the contractor.

In particular, we are interested in determining, for each of the above aspects of the relationship between the surety and the contractor, the following information:

- What information must be provided to the surety and in what specific format, if any;
- Who provides this information;
- How is it verified;
- What evaluation criteria are used in assessing this information.

Attached are several tables which summarize the current state of our knowledge pertaining to this information. We seek your assistance in verifying the information content of these tables, (simply cross off items which do not apply), in completing them and in providing any supplementary information you deem to be of importance. We would be most appreciative if you would direct your efforts to providing information on the methods of verifications and the evaluation criteria employed by the surety. We would also like to obtain, where possible, typical information collection and evaluation formats used by your company, and a brief description of the qualifications of the surety personnel engaged in making decisions on behalf of the surety with respect to the general contractor.

Your cooperation in providing the above information is greatly appreciated. When the study is complete, we will be pleased to forward a copy to you.

Yours sincerely,

Alan D. Russell
Associate Director
Centre for Building Studies

Mihalis Kirittopoulos
Research Assistant
Centre for Building Studies

ADR/MK/nfs
cc.
Encls.

FIGURE 3.5B LETTER USED IN INTERVIEWS

THE USF&G COMPANIES BALTIMORE MD

NEW CONTRACTOR'S QUESTIONNAIRE

AGENT

DATE

NAME OF FIRM

ADDRESS

CITY | STATE | ZIP CODE | TYPE OF BUSINESS: ☐ CORPORATION ☐ INDIVIDUAL ☐ PARTNERSHIP

CLASS OF CONTRACTOR: ☐ BUILDER ☐ HIGHWAY ☐ HEAVY CONSTR. ☐ SUBCONTRACTOR ☐ SPECIALTY ☐ OTHER

RESUME OF FIRM

CORPORATE OFFICERS PARTNERS PROPRIETOR

NAME	AGE	POSITION	% OF STOCK	NAME OF SPOUSE

WILL ALL OF THE ABOVE AND THEIR SPOUSES PERSONALLY INDEMNIFY SURETY? ☐ YES ☐ NO IF NO EXPLAIN

KEY PERSONNEL

- ATTACH RESUME OF EACH PERSON INCLUDING THOSE LISTED ABOVE OUTLINING AGE PRINCIPAL DUTIES EDUCATION EXPERIENCE SPECIFYING TYPE OF WORK LARGEST JOBS POSITIONS HELD AND ALL PREVIOUS EMPLOYERS

HAS YOUR FIRM OR ANY OF ITS PRINCIPALS EVER PETITIONED FOR BANKRUPTCY FAILED IN BUSINESS OR DEFAULTED SO AS TO CAUSE A LOSS TO A SURETY? ☐ YES ☐ NO IF YES PLEASE EXPLAIN FULLY

IS YOUR ORGANIZATION PRESENTLY INVOLVED IN ANY LITIGATION? ☐ YES ☐ NO IF YES, PLEASE EXPLAIN FULLY

IF YOU HAVE BEEN PREVIOUSLY BONDED STATE NAME OF SURETY AND REASON FOR CHANGE

LIST ANY SUBSIDIARIES OR AFFILIATED COMPANIES EXACT NAME TYPE OF BUSINESS OWNERSHIP

OPERATION

WHAT TYPE WORK DO YOU NORMALLY UNDERTAKE?

WHAT PORTION OF YOUR WORK IS NORMALLY FOR

GOVERNMENT AGENCIES _____ % PRIVATE OWNERS _____ %

IN WHAT GEOGRAPHICAL AREA?

ON THE AVERAGE WHAT PORTION OF YOUR WORK IS SUB CONTRACTED? _____ % DO YOU NORMALLY REQUIRE BONDS OF YOUR SUBS? ☐ YES ☐ NO IF NO EXPLAIN

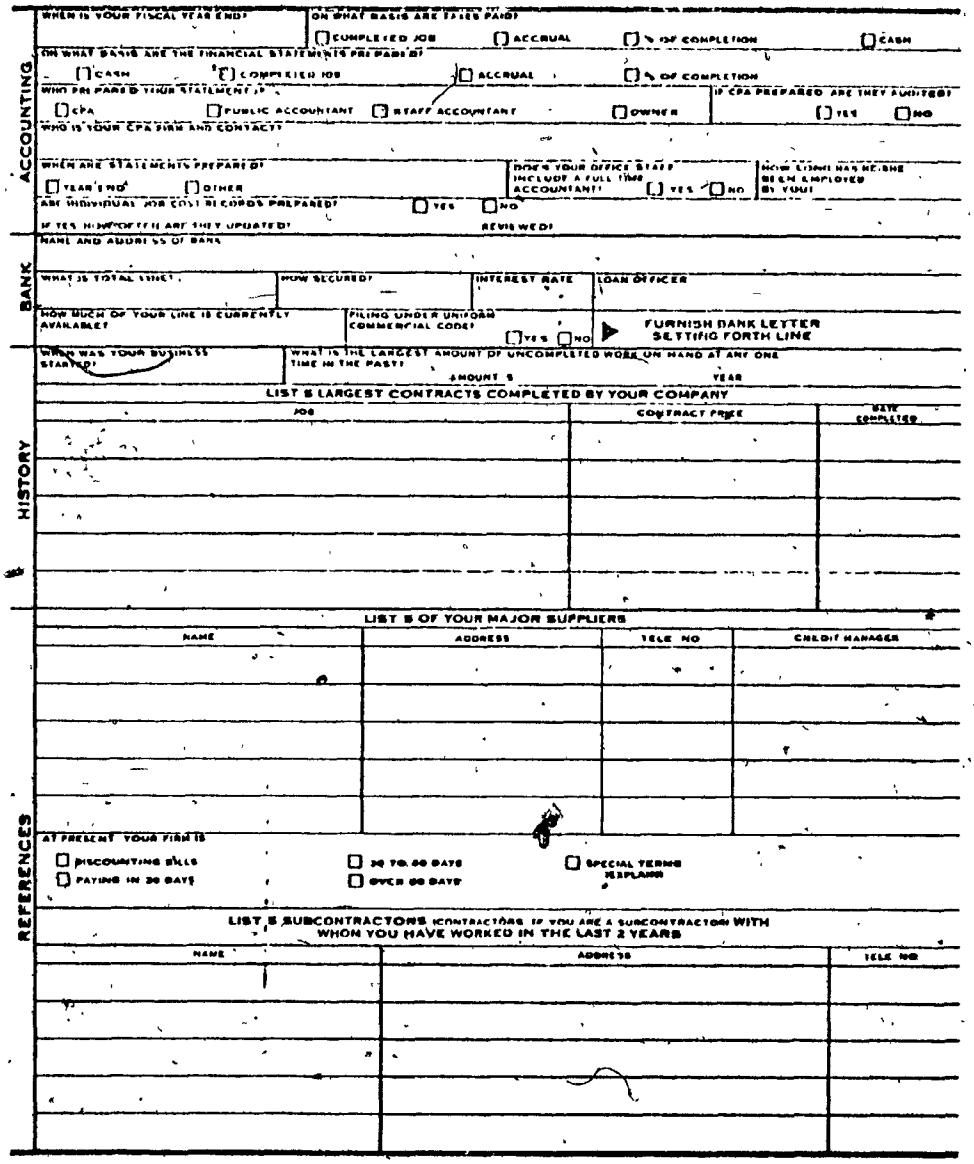
DO YOU OFTEN ENGAGE IN JOINT VENTURES? ☐ YES ☐ NO

DO YOU HAVE THE NECESSARY EQUIPMENT TO PERFORM ANTICIPATED JOB/PROGRAM? ☐ YES ☐ NO

FURNISH EQUIPMENT LIST BELOW DO YOU LEASE EQUIPMENT? ☐ YES ☐ NO IF YES GIVE TERMS OF LEASE AGREEMENTS

CONTRACT IS OF NO

FIGURE 3.6A NEW CONTRACTOR'S QUESTIONNAIRE



ACCOUNTING

WHEN IS YOUR FISCAL YEAR END?

ON WHAT BASIS ARE TAXES PAID? ☐ COMPLETED JOB ☐ ACCRUAL ☐ % OF COMPLETION ☐ CASH

ON WHAT BASIS ARE THE FINANCIAL STATEMENTS PREPARED? ☐ CASH ☐ COMPLETED JOB ☐ ACCRUAL ☐ % OF COMPLETION

WHO PREPARED YOUR STATEMENT? ☐ CPA ☐ PUBLIC ACCOUNTANT ☐ STAFF ACCOUNTANT ☐ OWNER

IF CPA PREPARED ARE THEY AUDITED? ☐ YES ☐ NO

WHO IS YOUR CPA FIRM AND CONTACT?

WHEN ARE STATEMENTS PREPARED? ☐ YEAR END ☐ OTHER

DOES YOUR OFFICE STAFF INCLUDE A FULL TIME ACCOUNTANT? ☐ YES ☐ NO

HOW LONG HAS HE/SHE BEEN EMPLOYED BY YOU?

ARE INDIVIDUAL JOB COST RECORDS PREPARED? ☐ YES ☐ NO

IF YES HOW OFTEN ARE THEY UPDATED? REVIEWED?

BANK

NAME AND ADDRESS OF BANK

WHAT IS TOTAL LINE? | HOW SECURED? | INTEREST RATE | LOAN OFFICER

HOW MUCH OF YOUR LINE IS CURRENTLY AVAILABLE? | FILING UNDER UNIFORM COMMERCIAL CODE? ☐ YES ☐ NO ▶ FURNISH BANK LETTER SETTING FORTH LINE

HISTORY

WHEN WAS YOUR BUSINESS STARTED?

WHAT IS THE LARGEST AMOUNT OF UNCOMPLETED WORK ON HAND AT ANY ONE TIME IN THE PAST? AMOUNT $ YEAR

LIST 5 LARGEST CONTRACTS COMPLETED BY YOUR COMPANY

JOB	CONTRACT PRICE	DATE COMPLETED

REFERENCES

LIST 5 OF YOUR MAJOR SUPPLIERS

NAME	ADDRESS	TELE NO	CREDIT MANAGER

AT PRESENT YOUR FIRM IS

☐ DISCOUNTING BILLS ☐ PAYING IN 30 DAYS ☐ 30 TO 60 DAYS ☐ OVER 60 DAYS ☐ SPECIAL TERMS (EXPLAIN)

LIST 5 SUBCONTRACTORS (CONTRACTORS IF YOU ARE A SUBCONTRACTOR) WITH WHOM YOU HAVE WORKED IN THE LAST 2 YEARS

NAME	ADDRESS	TELE NO

FIGURE 3.6B NEW CONTRACTOR'S QUESTIONNAIRE

REFS.

LIST 3 ARCHITECTS OR ENGINEERS WHO HAVE SUPERVISED YOUR WORK IN THE PAST YEAR

ARCHITECT/ENGINEER	ADDRESS	OWNER/PROJECT

INSURANCE

LIST ANY "KEY MAN" INSURANCE CARRIED

NAME	AMOUNT	ISSUING COMPANY	SURRENDER VALUE

LIST OTHER INSURANCE COVERAGES IN EFFECT

COVERAGE	LIMITS	ISSUING COMPANY

WHAT HAS BEEN YOUR WORKMEN'S COMPENSATION EXPERIENCE OVER THE LAST 3 YEARS?

GENERAL LIABILITY & AUTO?

WILL THE OTHER LINES OF INSURANCE BE OFFERED TO US/AG AT RENEWAL? ☐ YES ☐ NO

MISC.

IS YOUR OPERATION

☐ UNION ☐ NON UNION

WHAT SIZE PROJECTS AND BACKLOG DO YOU FEEL YOUR ORGANIZATION CAN UNDERTAKE?

SINGLE JOB $ _____ TOTAL PROGRAM $ _____

PREPARED BY	POSITION
SIGNATURE	DATE

PLEASE PROVIDE YOUR LAST THREE YEAR END FINANCIAL STATEMENTS AND A CURRENT INTERIM FINANCIAL STATEMENT. IF CERTIFIED AUDITS WERE NOT PREPARED THE LAST YEAR END BALANCE SHEET MUST BE SUPPLEMENTED WITH COMPLETE SCHEDULES OF BANKS ACCOUNTS RECEIVABLE AND PAYABLE, NOTES RECEIVABLE AND PAYABLE INCLUDING ADDRESSES.

COMPLETE THE ATTACHED "STATUS OF CONTRACTS" (CONTRACT 250) AS OF THE LAST FISCAL YEAR END AND CURRENT DATE.

FIGURE 3.6C NEW CONTRACTOR'S QUESTIONNAIRE

CONTRACT STATUS REPORT - PERCENTAGE OF COMPLETION METHOD
SCHEDULE "NP"

ÆTNA CASUALTY COMPANY OF CANADA
Head Office — Toronto, Ontario

S.F. No.__________

For the period__________19___ through__________19___

Name of Contractor____________________ (Tax Year End is__________)

	1	2	3	4	5	6	7	8	9	10	11	12	13
			CURRENT FORECAST - ENTIRE CONTRACT			RECOGNIZED EARNINGS TO DATE							
Contract Description	Contract Price	Original Estimated Gross Profit	Current Estimated Total Direct Cost (See Note 3)	Estimated Gross Profit (Loss) on Completion	Direct Cost To Date	% Complete (See Note 4)	Total Gross Profit (Loss) Recognized To Date	Gross Profit (Loss) Recognized in Previous Fiscal Period(s)	Gross Profit (Loss) Recognized in This Period	Total Amount Billed To Date Including Retainage	Total Billings in Excess of Total Costs To Date	Billings in Excess of Costs and Recognized Earnings	Costs and Estimated Earnings in Excess of Billings
TOTALS													

Do any Billings include unapproved claims or disputed items? ☐ Yes ☐ No If so, attach complete explanation.

NOTE: 1. Total in Column 9 must equal Gross Profit figure on Profit and Loss Statement.
2. Total in Columns 12 and 13 must equal similar items in Balance Sheet.
3. Estimated Total Direct Cost must be based on Current Cost Analysis.
4. If some method other than the ratio of Cost To Date to Total Est. Cost is used to develop "% Complete" explain:

Indicate accounting method used in reporting income for Federal Income Tax purposes:
☐ Percentage of Completion
☐ Completed Contract
☐ Other (explain)__________

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FIGURE 3.7 STATUS OF UNCOMPLETED WORK REPORT -- PERCENTAGE OF COMPLETION METHOD

CONTRACT STATUS REPORT - COMPLETED CONTRACT METHOD
SCHEDULE "N"

ÆTNA CASUALTY COMPANY OF CANADA
Head Office – Toronto, Ontario

S F No. ____________

Name of Contractor ____________ As of ____________ 19__

UNCOMPLETED CONTRACTS - Include both bonded and unbonded contracts. If cost plus, indicate upset price.

Contract Description	Contract Price	Original Estimated Gross Profit	Total Amount Billed to Date including retainage	Total Costs Incurred to Date	Excess of Billings Over Costs	Excess of Costs Over Billings	* Current Estimate of Cost to Complete	Estimated Gross Profit (Loss) on Completion
TOTALS								

CONTRACTS COMPLETED SUBSEQUENT TO DATE OF PREVIOUS REPORT

Contract Description	Contract Price	Original Estimated Gross Profit	Total Billings	Total Cost	Final Gross Profit (Loss)
TOTALS					

Do any Billings include unapproved claims or disputed items? ☐ Yes ☐ No
If so, attach complete explanation.

Indicate accounting method used in reporting income for Federal Income Tax purposes:
☐ Completed Contract
☐ Percentage of Completion
☐ Other (explain)

* Estimate of cost to complete must be based on current cost analysis.

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FIGURE 3.8 STATUS OF UNCOMPLETED WORK REPORT -- COMPLETED CONTRACT METHOD

THE AETNA CASUALTY AND SURETY COMPANY
Hartford, Connecticut 06115

SPECIAL FILE NO.

FINANCIAL STATEMENT OF

as of 19

Was this Statement Prepared by a C.P.A.?
If not, by Whom?
If Prepared by a C.P.A. or Independent Accounting Firm, WHAT VERIFICATION WAS MADE BY THEM?
If not verified by the Accountant GIVE FULL DETAILS OF SURETY'S VERIFICATION ON REVERSE SIDE

ASSETS AS GIVEN (nearest hundred)	M	C	AS ALLOWED BY FIELD (See NOTE 1)		HOME OFFICE ALLOWANCES		LIABILITIES (nearest hundred)	M	C
Cash in Banks							Notes Payable to Banks		
Cash on hand							Equipment Notes, due within 1 year		
Certified Checks or Deposits							Notes Payable for Bid Checks		
Bonds—describe							Other Notes Payable—explain		
Stocks—attach list									
Accounts Receivable-Completed Contracts—Approved							Accounts Payable		
Actual Earned Estimates due							Current Earned Estimates and/or Retainages due Subs		
Retained Percentages									
Value of Work done, not billed—Work in process							Estimated Unbilled Costs on Work in Process		
Other Accounts Receivable									
Notes Receivable							Taxes, excluding Federal Income		
Mortgages owned							Federal Income Tax Due or Accrued		
Material to be incorporated into work on hand							Total Quick Liabilities		
Cash value Life Insurance									
Total Quick Assets									
Total Quick Liabilities									
NET QUICK ASSETS									
Equipment at Cost Price							Equipt. Notes due after 1 year		
							Reserve for Depreciation		
1 Homestead							1 Mortgage		
2 Real Estate used in this business							2 Mortgage		
3 Other Real Estate							3		
							Notes payable to Indemnitor and/or Subordinated		
Material in General Storage							Deferred Income		
							Total Liabilities		
Total Assets							Capital		
Total Liabilities							Surplus		
TOTAL NET ASSETS									

NOTE 1. DO NOT include claims for extras, additional quantities, or damages. If credit desired explain fully in separate memo

Date of last previous Statement? 19

What were net quick Assets as given? $ As allowed? $

What were total net Assets as given? $ As allowed? $

Where Statement reflects a radical increase or decrease in Net Quick or Net Worth, complete explanation MUST BE GIVEN:

BANK CREDIT LINE: Date

Amount $ Bank Condensed

— SEE REVERSE SIDE —

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FIGURE 3.9A - FINANCIAL STATEMENT

VERIFICATION INFORMATION

(A.) Indicate the extent of verification of "Stocks", "Accounts Receivable-Completed Contracts", "Actual Earned Estimates", and "Retained Percentages", and explain how you arrived at your evaluation of these items.

(B.) Where a substantial portion of net quick consists of one or a combination of several of the following items, explanation MUST BE GIVEN as to what verification has been made and how you arrived at your evaluation of these items:

1. Work in Process
2. Other Accounts Receivable (verify larger items) (are any in dispute?)
3. Material for Work on Hand (general nature)
4. Notes Receivable (are they collectible?) (When is payment expected?)
5. Mortgages Owned (can they be discounted with a bank or otherwise liquidated or disposed of so as to promptly raise working capital?)

(C.) If "Accounts Receivable-Completed Contracts" contain any claims for extras, explain fully.

(D.) If Cash Value Life Insurance shown, indicate Beneficiary and Life Owner. Indicate whether it is assigned or pledged in whole or in part to anyone.

(E.) What verification was made of Accounts Payable and Earned Estimates and Retainages due to Subs, Notes Payable, etc.

(F.) Where Contractor has procured equipment under lease or rental agreement(s) containing option to buy, obtain copy of agreement(s) or pertinent details of each.

(G.) Through what year have Federal Tax Returns been audited by the Internal Revenue Service?

(H.) Briefly outline the *results* and *date* of your last bank investigation, including the bank's recommendation of the account.

(I.) What was the average daily bank balance for the past three months?

— USE SPACE BELOW FOR ANSWERS AND COMMENTS CALLED FOR ABOVE. PLEASE IDENTIFY SAME BY USING PARAGRAPH LETTERS "A", "B", ETC., AS USED ABOVE —

Analysis Prepared by: _____

Approved by: _____

FIGURE 3.9B FINANCIAL STATEMENT

AETNA LIFE & CASUALTY

APPLICATION FOR CONTRACT BOND AND AGREEMENT OF INDEMNITY

AETNA CASUALTY COMPANY OF CANADA
Head Office — Toronto, Ontario

Field Office ______________________ Bond Number ______________________

NOTE: Copy of contract, specifications and drawings, and applicant's financial statement must accompany this application and all questions answered fully. The Company reserves the right to decline this application and to withhold reason for declination, as all information relative thereto is regarded as confidential.

1. Full name of applicant ______________________ Age ______
   (Give full name. If corporation, give exact corporate title.)
2. Business address ______________________
   (Street, City and Prov.)
3. Kind and amounts of bonds required: Proposal Bond $ ________ Faithful Performance Bond $ ________
   Labor and Material Bond $ ________ Advance Payment Bond $ ________ Maintenance Bond $ ________
4. If bond applied for is Proposal Bond what is approximate amount of contract $ ________ Date of Bid Opening ________ 19__
5. The amount of contract is $ ________ Date of Award ________ Date of Contract ________
6. To whom is bond given ______________________
   (Give full name. If a corporation, give exact corporate title.)
   Business address ______________________
7. Nature of contract ______________________
   (Give concise description and location.)
8. Name and address of Engineer or Architect in charge of work ______________________
9. Date work is to start ________ Completed by ________ Penalty for non-completion ________
10. Are any payments made in bonds, mortgages, stocks, certificates, warrants, assessments, etc? ________
11. Percentage retained from payments until completion ________
12. How long must work be kept in repair, or guaranteed, after completion? ________
    Is this repair or maintenance guarantee limited to defects in workmanship and materials? ________
    If not, describe guarantee fully ________
13. Applicant's estimate of cost (excluding profit) $ ________ Estimate of Engineer or Architect $ ________

INFORMATION REGARDING OTHER BIDS

	NAME OF CONTRACTOR	ADDRESS	AMOUNT OF BASE BID
LOW BIDDER			$
2ND BIDDER			
3RD BIDDER			

CAN 15306-A ED. 3 72 [illegible] PRINTED IN CANADA

FIGURE 3.10A APPLICATION FORM FOR CONTRACT BOND AND AGREEMENT OF INDEMNITY

14. Will applicant sub-let any parts of the work? _____ Will sub-contractors be required to furnish Corporate Surety Bond? _____
Give full particulars.

AMOUNT	CHARACTER OF WORK	NAME OF SUB-CONTRACTOR	ADDRESS	NAME OF SURETY

15. Name 3 largest contracts that you have completed similar to the one here considered, giving in each case.

CONTRACT PRICE	KIND OF CONSTRUCTION	NAME AND ADDRESS OF OWNER	NAME AND ADDRESS OF ENG. OR ARCH

16. Give information below about all contracts you now have under way, including any other outstanding bids.

CONTRACT PRICE	PERCENTAGE COMPLETED	KIND OF CONSTRUCTION	SURETY	LOCATION OF WORK	NAME AND ADDRESS OF ENG. OR ARCH

17. Will any new or additional plant be purchased? _____ Give estimated cost. $ _____. Use separate sheet if necessary.
18. In what other business, if any, are you interested? _____
19. Has application for this bond been made to another company? _____ If so, what company? _____
20. Have you ever failed in business? _____ Are you having any controversy with anyone over any contract, or payment for labor or material bills on any contract? _____ Are there any mechanic's liens filed on any of your work anywhere? _____ Are there any judgements against you? _____ Total amount? $ _____
21. On the work for which this bond is written, will you carry the following insurance? Employers Liability _____ Compensation Insurance _____ Public Liability _____ Contingent Liability _____ Auto _____ Fire _____
Other forms _____
22. What Life Insurance do you carry? _____ (Amount, name of company)
23. To whom payable? _____

If a co-partnership, answer these questions: Date formed _____
24. Names of all individuals composing same.

NAME	ADDRESS	AGE

IMPORTANT: Separate financial statement must be completed and signed by each member, showing his individual assets and liabilities, excluded all his interest in the firm's business.

25. Has any member of the firm ever failed in business? _____
26. If a corporation, answer these questions:
In what Province are we organized? _____ When incorporated? _____ Principle office _____
27. References: Give name & reference of Architects, or Owners, for whom you have done work

NAME	ADDRESS	BUSINESS

FIGURE 3.10B APPLICATION FORM FOR CONTRACT BOND AND AGREEMENT OF INDEMNITY

Tenth: That in event any claim is filed with the Company on the bond herein applied for, or if any suit is brought against the Company on said bond or in connection therewith, the Indemnitor(s) hereby covenant and agree to immediately on demand deposit with the Company an amount sufficient to indemnify it up to the full amount claimed or sued for.

Eleventh: That no act or omission of the Company in investigating, amending, furnishing or accepting any instrument executed by the Company and no consent or refusal to consent by the Company to any modifications, amendments, limitations or extensions of the original contract or any supplemental or other agreements whatever, shall in any way affect the liability of the Indemnitor(s) hereunder, nor shall the Indemnitor(s) be relieved from this obligation by reason thereof, and it is further agreed that the Company may alter, change, modify, amend, limit or extend any instrument and may execute consents thereof, or waive and new obligations in its place or in lieu thereof, or may assent to such alterations, changes, modifications, amendments, limitations or extensions of any instrument without notice to the Indemnitor(s), notice being expressly waived, and in such case the Indemnitor(s) shall be liable to the Company as fully and to the same extent on account of any such changed, modified, limited or extended instrument or such consents thereof, or other or new obligations in its place or in lieu thereof, as fully as if such instrument were described at length herein.

Twelfth: That these covenants shall be binding not only upon the Indemnitor(s), jointly and severally, but as well upon their respective heirs, executors, administrators, successors and assigns, and the Indemnitor(s) hereby affirm that their liability under this instrument is not dependent upon the procurement of any other signatures so some.

Thirteenth: The words Indemnitor(s), applicant(s), and principal(s), or personal pronouns used to refer to said words, shall apply irrespective of number or gender.

Fourteenth: If application is for proposal or bid bond and if the applicant is awarded the contract the applicant shall not be obligated to ensure his "honored" bond from the Company nor shall the Company be obligated to sign such bond.

WITNESS the following signature(s) and seal(s) this _____ day of _____, 19____, homestead and all other exemptions being hereby expressly waived.

Witness _____ _____ Applicant (Seal)
Individual

_____ Applicant (Seal)
Partnership

Witness _____ By _____

_____ Applicant (Seal)
Corporation

Attest _____ Secretary By _____ President

NOTE: The signature of the applicant(s) who are principal(s) in said bond, and each indemnitor who is not an applicant, must be witnessed. Where a co-partnership signs as Indemnitor and not as applicant, first names must be signed and also the signatures of each member of the firm.

In consideration of ÆTNA CASUALTY COMPANY OF CANADA executing the bond hereinabove applied for, we jointly and severally join in the foregoing indemnity agreement.

If Indemnitors are individuals sign here:

INDEMNITORS

Witnesses:

_____ Witness as to _____ (Seal)

_____ Witness as to _____ (Seal)

_____ Witness as to _____ (Seal)

If Indemnitor a partnership or corporation sign here:

_____ (Seal)
Partnership or Corporation

Witness _____ By _____ (Seal)

Witness _____ _____ (Seal)

Witness _____ _____ (Seal)

Witness _____ _____ (Seal)

FIGURE 3.10C APPLICATION FORM FOR CONTRACT BOND AND AGREEMENT OF INDEMNITY

The undersigned hereby affirm, that the foregoing declarations made and answers given, are the truth, without reservation, and are made for the purpose of inducing ÆTNA CASUALTY COMPANY OF CANADA, to become or to procure surety and co-surety, if necessary, on whatever bonds may be required in connection with the project hereinbefore mentioned, all of which bonds are hereby applied for and all of which will be referred to in the singular as "bond", and they hereby appoint said ÆTNA CASUALTY COMPANY OF CANADA agent for procurement of such surety and co-surety;

The undersigned, hereinafter called the Indemnitor(s), in consideration of said ÆTNA CASUALTY COMPANY OF CANADA, or any Company or Companies which it may procure in substitution or as co-surety jointly with it (all hereinafter called the Company), executing or consenting to execute such bond or bonds as are herein applied for, [illegible] hereby covenant and agree with the Company, its successors and assigns, as follows.

First: The Indemnitor(s) will pay the Company in advance a premium charge based on the rates of the Company in force as of the effective date of this bond and will thereafter pay any renewal premiums which may become due until the Surety shall, in the manner provided by law, be discharged and released from any and all liability and responsibility upon said bond and all matters arising therefrom and competent written legal evidence of such discharge or release satisfactory to the Company is served thereon at its Head Office in the City of Toronto.

Should the amount of the contract herein stipulated, and upon which premiums are based, be increased or decreased, it is understood and agreed that the premium will be adjusted accordingly, calculated at the rate upon which the premium hereinabove stipulated is calculated.

Maintenance or Guarantee

If any maintenance or guarantee of the work, after completion, is provided for in the contract, for a term exceeding one year, for which either the contract bond or any separate bond which may be executed is liable, the Indemnitor(s) agree to pay the Company in advance for the entire term of said maintenance guarantee a premium, calculated at the rate of $ per $1,000, computed on the entire amount of the contract price. [illegible]

Second: [illegible]

Third: [illegible]

Fourth: [illegible]

Fifth: [illegible]

Sixth: [illegible]

Seventh: [illegible]

Eighth: [illegible]

Ninth: [illegible]

FIGURE 3.10D APPLICATION FORM FOR CONTRACT BOND AND AGREEMENT OF INDEMNITY

Ætna LIFE & CASUALTY

CONTRACT STATUS REPORT

ÆTNA CASUALTY COMPANY OF CANADA
THE ÆTNA CASUALTY AND SURETY COMPANY
Head Office for Canada — Toronto, Ontario

Date this Notice Mailed _____

Bond No. _____ Amount of Bond $ _____ Date of Bond _____

Name of Principal _____

Address _____

Description of Contract _____

_____

According to our records, contract for which above bond was given should be completed about _____

Kindly furnish particulars indicated below.

ADDRESS YOUR REPLY ON THIS SHEET TO

_____

_____

Yours truly,
THE ÆTNA CASUALTY AND SURETY COMPANY

By _____
Attorney-in-Fact

PARTICULARS REQUESTED

Original Contract Price . . . . . $ _____

Additions to Contract . . . . . $ _____

Total $ _____

Deductions from Contract . . . . . $ _____

Total Contract Price $ _____

Payments made to date . . . . . $ _____

Earned Statements due to contractor . . . . . $ _____

Retained Percentage Withheld . . . . . $ _____ Total $ _____

Amount of Contract Uncompleted $ _____

If Contract Not Completed, probable date of Completion is _____

If Contract Completed, please state Date of Acceptance _____

Remarks _____

_____

_____

_____

Date _____, 19__. Signature _____

Printed in Canada

FIGURE 3.11A CONTRACT STATUS REPORT FOR THE OWNER

[redacted]

TRAVELERS Indemnity Company of Canada. TORONTO, CANADA

Gentlemen:

Re: Bond No.
Principal:

We are the Surety Company who gave the above bond in support of the contract for

We are writing to you at this time for a progress report on this job and would ask you to complete the information requested below.

Without prejudicing your right or affecting our liability under our bond described above, we would appreciate as much of the information as is now available.

Yours very truly,

Attorney-in-Fact

(1) IF CONTRACT COMPLETED — PLEASE STATE:

Approximate Acceptance Date __________

Final Contract Price __________

(2) IF CONTRACT UNCOMPLETED — PLEASE STATE:

Approximate dollar amount of contract completed __________

(3) REMARKS (if any) __________

DATED this day of , 19

Title __________ Signature __________

[illegible]

FIGURE 3.11B CONTRACT STATUS REPORT FOR THE OWNER

ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

I CAPACITY

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
A. RESUME OF FIRM 1. General Information a. Name of Firm b. Address c. City, Province, Postal Code d. Type of Business - Corporation - Individual - Partnership e. Class of Contractor - Building - Highway - Other	1. The type of work performed enters in the assessment of financial statements. For example, more long-term debt is expected for a road builder than for a general building contractor because of different equipment needs.
2. Corporate Officers - Partners - Proprietors a. Name b. Age c. Position d. % of stock e. Name of spouse	2. The surety looks for a distribution of ages of the firm's officers for purposes of continuity.
3. Key Personnel a. Name b. Age c. Principal Duties d. Education e. Experience f. Position(s) held g. Type of work and in what capacity h. Working years with the organization i. Previous employers	3. Detailed resumes are required for the company's key personnel. This information comprises one of the most crucial inputs into the underwriting process. The surety looks for depth of management, experience, compensating strengths. A very important factor is years of experience with the company being evaluated, there being less risk when people have worked together for a reasonable period of time. Also of concern are the strengths of second-line management -- project managers, engineers, field superintendents and foremen.
4. Have you ever petitioned for bankruptcy? Have you ever failed to complete a contract? Explain.	5. There are two concerns here: (i) are the firm's assets in jeopardy and (ii) are the officers of the firm litigious.
5. Plans for continuation of the business. Are there are stock retirement or buy-sell agreements available to the senior people in the company?	6. The concerns here are with (i) what mechanisms have been established for continuity when one or more senior people retire and/or die, and (ii) does the firm have a clear idea of what it wants to achieve, say, over the next five years and does it have a plan to get there.

TABLE 3.1A ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
B. OPERATIONS OF FIRM	
1. Have you been bonded before? In what amount? Reasons for change? Explain.	1. A contractor changes sureties for one of three reasons: (a) he has grown beyond capacity of current surety to service him; (b) his current surety rejects him; (c) a surety (the new one) convinces the contractor he should switch his business to him. The surety in evaluating the contractor is really concerned with case (b). Why did the surety no longer wish to underwrite their contracts? Too many losses? Poor management?. Personal conflicts?
2. List any subsidiaries or affiliated companies; name, type of business, ownership.	
3. What type of work do you usually undertake?	3. The surety may request a more detailed description of types of work within a given category, e.g., schools, if a building contractor. The concern here is with risk, i.e., is the company somewhat diversified or is it so highly specialized as to be vulnerable if a downturn in the demand for its current speciality occurs?
4. What size of contracts are you best qualified to handle?	
5. In what geographical area do you operate?	5. Used to evaluate labour situation, political situation, availability of materials, capable local craftsmen, etc. Relates to the category known as Conditions.
6. On the average, what portion is sub-contracted?	
7. Do you engage in joint ventures?	7. Used for determining what mechanism the contractor uses for spreading or reducing risks associated with large and/or complex projects.
8. Do you have equipment? Do you lease equipment? Furnish equipment schedule.	8. The surety is interested in market value of equipment, the list of equipment, the depreciation of equipment, current commitment on equipment and the type of financing contract(s) the contractor has with the equipment supplier(s).

TABLE 3.1B ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
C. INSURANCE	
1. List any key persons -- principal officers, shareholders, partners, etc., and insurance carried. a. Name b. Amount c. Issuing Company d. Surrender Value	1. Many contracting firms are family organizations. The death of one or more key individuals may create severe financial problems because of the succession duties that must be paid to the government. These problems can be largely avoided if life insurance policies are taken out for these individuals.
2. List other insurance coverages in effect. a. Coverage b. Limits c. Issuing Company	2. The contractor should have a complete portfolio of insurance. If his portfolio is deficient in some respect, the surety may require him to take out additional insurance. For example, it was noted by one surety interviewed that a construction company went bankrupt because of embezzlement -- an outcome that could have been avoided by an appropriate insurance policy.
3. Do you carry public liability insurance? State limits and in what company.	
4. What has been your Workman's Compensation experience over the last three years?	4. To a certain extent this information reflects upon the safety program employed by the company.

TABLE 3.1C: ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

II CAPITAL

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
A. BANK INFORMATION	
1. At what banks have you established lines of credit? a. Name and address of bank b. Loan officer c. Credit line d. How secured? Name of endorser? e. Current credit line f. Furnish bank letter setting forth line.	The concerns of the surety include: To what uses does the contractor put this credit line? Does he depend on this credit line? What are his borrowings with time? What collateral has he provided to the bank? Has he provided the bank with proper information (cash flow, budget, audited financial statements), or has the bank manager had to prepare everything him/herself? The mechanism used to obtain this information may include a visit to the contractor's bank by the surety.

TABLE 3.2A ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
B. FINANCIAL STATEMENTS	
1. Balance Sheet Statement	1. Items of concern to the surety:
a. Working Capital	- On what basis are taxes paid? - What accounting method is used for preparing financial statements? - Who prepared the statements? - Are they really consultants or figure jugglers? - Are they expert in the construction industry? - When are statements prepared? - Does the contractor's staff include a full-time accountant? If not, why not? - Have financial statements been prepared according to the same procedure in order to be comparable?
b. Current ratio ($\frac{\text{Current Assets}}{\text{Current Liabilities}}$)	
c. Total debt-to-net-worth ratio ($\frac{\text{Total debt}}{\text{Net worth}}$)	
d. Net profit margin ratio ($\frac{\text{Net Profit}}{\text{Net Sales}}$)	
e. Earning power ratio ($\frac{\text{Net Profit}}{\text{Total Assets}}$)	
f. Aging of accounts receivable and payables (e.g., holdbacks)	
2. Profit and Loss Statement a. Annual net income to net worth ratio b. Annual net income to working capital ratio c. Annual net income to sales ratio d. Gross profit to annual sales ratio	2. What are the sources of liquidity? - Marketable securities - Real estate - Working capital - Overbilling - Cash - Are receivables really receivables or bad debts? - What is the liquidity of receivables? - What is the capitalization of the company? - Profitability of the company? - Profitability of investments?
3. Source and application of funds	3. Items of concern to the surety include: - What kind of new assets are required? - To what extent will they be financed by internal funds and to what extent by external funds? - How much of the company's needs for funds are met by funds generated from operations, by borrowing money (debt) and from equity?
4. Financial statements of associated or affiliated firms or joint venture projects.	

TABLE 3.2B ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

II CAPITAL

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
C. SCHEDULE OF CONTRACTS [ALSO USED FOR ASSESSING COST CONTROL]	Information must be submitted for all projects whether they are bonded or not. The surety is committing itself to a company, not a project.
1. Completed a. Contract Description b. Contract Price c. Original estimated gross profit d. Total billings e. Total Cost f. Final gross profit	Examination of the schedule of contracts reveals: (i) whether the contractor is maintaining a liquid position by constantly overbilling; (ii) does each project, on average, bring in its share of profit; (iii) the amount of work (no. of projects and volume) that can reasonably be handled at any one time (capacity); (iv) what the next financial statement should look like.
2. In Progress a. Contract Price b. Billings to Date c. Cost to date d. Estimated costs to complete e. Billings in excess of costs f. Estimated Gross Profit g. Gross profits taken in prior fiscal years	

TABLE 3.2C ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

III CHARACTER

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
A. REFERENCES	
1. List of five of your major suppliers: a. Name b. Address c. Telephone Number d. Credit manager	- Are you the kind of people who look for ways and means of walking off the job when difficulties arise or will you bend every effort to complete the project, including ploughing in your own financial resources if necessary?
2. List of 5 sub-contractors that you have worked with in the past 3 years: a. Name b. Address c. Telephone number	- Do you pay your bills as agreed? Is your firm the kind which is sued every day by its suppliers for payment?
3. List of 3 architects and/or engineers who have supervised your jobs: a. Name b. Address c. Owner/project	- Do you get rich at other people's expense?
	- What do these people think of you? Do you have a reputation as a firm who gets the job done within budget, on time and according to the specifications?
	- What is your aptitude and philosophy of doing business, how do you stand in the eyes of the above people?
	a. Your moral qualities? b. Your financial standards?

TABLE 3.3 ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
A. COST ACCOUNTING	
1. Cost Accounting a. Are job cost records prepared and allocated to specific jobs? b. How often are they updated? Reviewed? c. Do you get the needed figures at the right time, or one month later? d. Do you take into account the variance between estimated costs and real costs? e. Do you prepare cash flows and budgets which you keep up to date on each project? What is their frequency? f. Are job costs analyzed, and how detailed is the analysis?	1. Concerned with effectiveness of control system. Is information collected at sufficiently frequent intervals to permit effective action to be taken if the job is not progressing as intended? By controlling cash flow, control can be exerted over the job. Effective control procedures provide the information required by the surety and thus serves the dual functions of progress control and external relations.

TABLE 3.4A ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

KIND OF INFORMATION	EVALUATION CRITERIA/EXPLANATORY NOTES
B. SCHEDULE OF CONTRACTS 1. Completed a. Contract Description b. Contract Price c. Original estimated gross profit d. Total billings e. Total cost f. Final gross profit 2. In Progress a. Contract Price b. Billings to date c. Cost to date d. Estimated costs to complete e. Billings in excess of costs f. Estimated gross profit g. Gross profits taken in prior fiscal years	1. The schedule of contracts provides a useful commentary on the estimating ability of the firm and the effectiveness of its cost and time control procedures. It provides a basis for determining the extent of front-end loading used by the contractor. It provides basic information regarding: - Is the company's tendering method realistic? - What percentage of each project has been completed as compared to the costs incurred to date? - Are estimated profits comparable to actual profits? - When is each project likely to be completed? - Is the per-project profitability in line with that of similar companies?

TABLE 3.4B ESTABLISHING RELATION WITH A SURETY, INITIAL UNDERWRITING

CHAPTER 4

CONTRACTOR RELATIONS WITH THE BANK

CHAPTER 4

CONTRACTOR RELATIONS WITH THE BANK

4.1 INTRODUCTION

The objectives of this chapter are:

(i) to describe the basis for the relationship between the contractor and the bank (section 4.2);

(ii) to identify and document the information requirements and assessment procedures of the bank with respect to:

- establishing an initial relationship and line of credit with the bank (section 4.3.1);
- maintaining this relationship (section 4.3.2);
- increasing the credit line with the bank (section 4.3.2); and

(iii) to identify the strengths and weaknesses of current reporting practices of contractors from the viewpoint of the bank (section 4.4).

The knowledge gained in fulfilling these objectives coupled with that gained in the previous chapter should provide a substantial basis for determining how both the internal and external reporting practices of the contractor can be enhanced.

The methodology used to attain the objectives previously stated consisted of an extensive review of the literature

and in-depth interviews with various bank officers. It should be noted that very little information pertaining to contractor-bank relations exists in the literature.

Further, based on the interview process, it was noted that bankers tend to be more reserved in nature than sureties with respect to providing information regarding their respective business practices. This chapter was, however, strengthened by the contributions of the bank officers interviewed.

Contractors require, from time to time, both short-term and long-term financing, with the former having a duration of less than a year, the latter in excess of a year. The need for short-term financing is dictated by the holdback provision of construction contracts and the manner in which receipts and disbursements flow for individual projects.

The determination of the amount of short-term financing required for a given time period is examined in Section 4.2. Short-term financing may be provided in several ways, with some of the more common ones being by a bank loan, by a bank credit line, by trade credit, by equity financing or by retained earnings. The most common method of financing is through a bank by way of a demand loan which may be called at any time by the bank. The firm's resources and/or assets are used as collateral.

Long-term financing is normally required for the purchase of

major equipment items and/or for starting or expanding a construction organization. The focus of this chapter is on the provision of short-term financing for the contractor and hence a discussion of common mechanisms for obtaining long-term financing is beyond the scope of this report.

4.2 DETERMINATION OF SHORT-TERM FINANCING REQUIREMENTS

In order to determine the working capital requirements of the firm for a given time period, and hence its short-term financing requirements, a cash flow analysis of its various projects and non-project-related activities must be performed. Predictions based on such an analysis are usually valid for only a short time period (six months to a year) because of the unpredictable factors which characterize construction.

The cash flow projection for an individual project provides the basis for developing an overall cash flow forecast for the company. The information required in order to make an accurate cash flow projection comes from various sources and includes:

(i) a detailed cost estimate of the job, broken down by activity and with the cost of each activity broken down according to labour, equipment and materials (temporary and permanent) input;

(ii) a list of sub-contracted items and their cost;

(iii) a schedule of activity start and finish times;

(iv) the contract provisions relating to terms of payment to the contractor, holdbacks and release of holdbacks;

(v) the terms of payment between the contractor and his labour, suppliers and sub-contractors;

(vi) an estimate of how indirect costs will be incurred (including mobilization charges if any) and how profit will be extracted from the job.

As seen from these information requirements, the contractor is required to estimate and plan in terms of the same set of tasks or activities. Further, if cash flow is to be used as a basis for project control, cost accounting data must be collected in terms of these same tasks (see section 2.4.1 of Chapter 2). Figures 4.1(a) through 4.1(f) depict the manner in which project expenses are incurred by the contractor for six major cost categories, namely, mobilization charges, indirect costs (general conditions), labour, materials, equipment and sub-contractors. Also shown in these figures are the disbursement curves associated with these expense items. Of importance with respect to each pair of expenses and disbursement functions is the time lag between them. Some of these time lags may be controlled to a limited extent by the contractor (e.g., materials, equipment, sub-contractors) while others cannot be controlled by him (e.g., labour). The curves shown in Figure 4.1(g) represent the summation of the expense and disbursement curves for each of the six major cost categories previously described.

To the total expense curve is added the contractor's general overhead and profit which results in the value curve depicted in Figure 4.2(a). This curve forms the basis for the progress claims submitted to the owner. Once agreement is reached between the owner's agent (architect-engineer) and the contractor as to the value of the work performed to date, the owner is required to release the monies owing for work executed to date minus an allowance for any previous progress payments and for holdbacks. This process results in the contractor receipts curve which is shown in Figure 4.2(a).

Using the disbursements and receipts curves, an assessment of the financing requirements associated with the project can be determined, as shown in Figure 4.2(b). By performing a similar analysis for each of the company's projects, it is possible to determine the total financing requirements for a given period of time. This estimate of working capital requirements then forms a basis for seeking funds from the bank, if required, as well as determining when they will be repaid.

It should be noted that the financing requirement for an individual project can be considerably influenced by the schedule selected. For example, for a given project duration, an early start schedule requires more working capital than a late start schedule. Further, working capital requirements increase as the project duration is shortened.

It must be realized that any forecast of working capital requirements can at best be an approximate estimate only because of several factors, some being:

(i) the unscheduled occurrence of change orders;

(ii) the difficulty in predicting exactly when materials will arrive at the site;

(iii) the desire not to miss an opportunity to receive discounts for quick payment for material purchases, and/or for bulk purchases of materials;

(iv) the difficulty in predicting how indirect costs will be assessed and paid; and

(v) the potential for cash shortages on the part of the owner, which result in progress payments being deferred.

Of more importance to the accurate prediction of working capital requirements, however, is the fact that the viewpoints of the contractor and owner are in conflict regarding cash flow. The owner or client wishes to minimize his capital outlay for the project, to delay the rate at which he pays out the capital sums in order to minimize the interest charges, and to achieve as short a project duration as possible so that he may begin to receive revenue from the project as soon as possible. Consequently, he will tend to challenge

all requests for payment as being in excess of the actual value in place, and once the size of the payment is determined, he will defer paying it as long as possible, despite contract terms to the contrary. From Table 2.3 in Chapter 2 it may be noted that the average collection period for receivables for Building Contractors is in the order of 85 days, which is considerably more than the allowable time period specified in most contracts.

The contractor, on the other hand, wants to minimize his cash requirements so he can carry as much work as possible on a company-wide basis. Consequently, he will tend to over-value or front-end-load his requests for payments in an attempt to use the client's money to finance the project, and he will also defer performing work as long as possible in order to minimize his cash requirements and financing charges. He will also tend to defer as long as possible payments to his sub-contractors and suppliers.

The impact of these various games on the working capital requirements for a project may be examined by altering the lag factors between expenses and disbursements as shown in Figures 4.1(a) through 4.1(f) and between value and receipts as shown in Figure 4.2(a).

In summary, a basis exists for projecting the working capital requirements of the firm. The desire to produce cash flow projections which are as accurate as possible has

important implications for the firm's estimating, planning and cost accounting procedures. Any projections of a project's cash flow and the firm's cash flow are at best approximations because of several factors beyond the control of the contractor. However, these factors enhance the need for cash flow management, rather than diminish it.

4.3 ESTABLISHING AND MAINTAINING A RELATIONSHIP WITH THE BANK

This section attempts to document:

(i) the assessment procedures used by the bank to determine whether it should provide a credit line to the contractor so as to meet his working capital requirements; and

(ii) the mechanism required to maintain a working relationship between the bank and the contractor, once established.

The information presented in this section was obtained mostly by way of interview with a few bank officers. Figure 4.3 contains a letter which formed the basis for the interviews held. The amount of time that could be devoted to the interview process by the bank officers contacted coupled with a reticence by most of them to have their interview taped, precluded a comprehensive investigation of all the issues set forth on the letter shown in Figure 4.3. Nevertheless, valuable information was obtained and the cooperation

afforded by the banks contacted was most gratifying.

The evaluation and decision processes used by the bank in regard to the contractor are similar in nature to those employed by the surety in that they are largely based on judgement and no hard-and-fast rules are applied.

4.3.1 Establishing a Relationship and Initial Credit Line with the Bank

Before a contractor can obtain a credit line from the bank, it must undergo a thorough investigation by the bank. The five C's of banking -- Capital, Collateral, Character, Capacity and Conditions -- form the focus of this investigation. The bank officers interviewed did not explicitly rank the five C's in terms of their relative importance. It was evident from the emphasis placed on each in the interviews held, however, that the order in which they are listed above reflects the priority given them by the bank.

The information sought and evaluation processes employed by the bank in regard to the five C's are summarized in Tables 4.1 through 4.5. The manner in which each of these categories is viewed is treated below. The following comment was made in regard to the overall process employed by the bank in assessing a credit application.

> "There are many people involved. The normal flow for a credit application is that the branch office will assemble the necessary information to formulate an application based on financial statements, personal worth statements, past history, future contracts on hand, etc. This application is then analyzed by the branch as to whether it is recommended or not. If it is, it then goes to our people in head office, and there are

various levels in head office it must pass through, depending on the amount of credit requested, before it is approved or rejected. Once a credit is approved, there are guidelines established for the credit, and it is difficult to say that each credit is the same or has the same guidelines."

Capital

The bank is primarily concerned with the financial strength of the contractor as it wants to assure itself that any monies advanced to the contractor will be repaid in full with interest. The bank seeks to assess this strength by examining, in detail, several of the firm's financial statements, the main ones being the balance sheet, the income statement, a statement of accounts receivable (aged) (see Figure 4.4 for a typical format), and a schedule of contract values (contracts schedule of position) (see Figure 4.5 for a typical format).

The balance sheet and income statement must be audited in order to be meaningful to the bank. Generally, statements are requested which cover the last four or five years, if available, as trends in financial performance are of crucial importance to the bank. Also of importance to the bank is the accounting method employed, with the percentage-of-completion method being the preferred one. The analysis of financial statements focuses on the firm's profitability and liquidity, and various ratios as set forth in Table 4.1 and Chapter 2 may be examined.

> "As a general rule of thumb, a bank, in assessing a general contractor, is looking to working capital and past history as to a proven profitability record. They are looking not only to the financial statement to confirm a working capital position but they are also looking at and following very closely individual contracts to make sure that they are profitable. To get involved with the general contractor, most banks use extreme caution, and in a lot of cases individuals, mainly the principals, are often brought in to support loans."

In examining the firm's liquidity, careful attention is paid to the items which contribute to the firm's current assets. In general, cash offers no problems, unless its use is restricted for some reason, such as the purchase of equipment. As seen in Figure 4.4, holdbacks qualify for treatment as accounts receivable. A problem arises regarding the treatment of a holdback as a current asset when it is associated with a project of long duration, say, two years and up. In general, except for the year in which the holdback will be received, the bank does not treat such a holdback as a current asset, thus reducing the liquidity position of the firm, at least as seen from the bank's viewpoint.

Considerable importance is attached to the statement of accounts receivable by the bank. In particular, attention is focused on the collection period associated with accounts receivable and on the mechamism the firm has to shield itself from the impact of uncollectable accounts or bad debts.

The contractors schedule of position provides valuable information regarding the overbilling practices of the contractor, which in turn permits the bank to determine whether the funds

collected from one job are being used to pay the suppliers and/or sub-contractors on another. This statement is also used to assess the extent of the profits, if any, being made by the contractor and this information is used to determine when the credit line will be "cleaned up". Further, it yields valuable insights to the bank regarding the estimating and control skills of the contractor, as the bank can go back and check actual performance against forecast performance.

Collateral

In general, the bank attempts to protect itself by having the accounts receivable assigned to the bank as well as by securing the personal guarantee of the firm's owners and key individuals. The need to make use of this collateral will probably only arise because of a default by the contractor on one or more jobs. Hence, its value to the bank is somewhat dubious, given the surety's prior claim to the same collateral. No attempt was made to explore other mechanisms used by the bank to protect itself, although an interesting one was suggested in [24]. In this case, it was suggested that the bank extend a loan to the supplier rather than to the contractor, thus placing the onus on the supplier to collect from the contractor and repay the bank. Whether such a practice is employed in Canada was not determined.

Some attention is also given to the firm's level of overhead expenses and, in particular, to the breakeven volume required to meet these expenses. The concern is that, if a company is not "lean", it might be required to bid on a large volume of potentially-unprofitable work, just to meet its overhead commitments.

Finally, to complete its assessment of the firm's financial strength, the bank runs a complete credit check on the contractor.

Character

> "The contractor who builds his organization by doing good work and treating everyone fairly, including his own personnel, is deserving of a bank credit to finance his current work. But a contractor who uses the company's funds which rightfully belong to the sub-contractor and to material suppliers is one to be carefully considered."
>
> [24]

It is left to the bank branch manager to determine which of the above two descriptions is most appropriate for the contractor at hand. In particular, he attempts to seek answers to four questions:

- How honest is the contractor?
- What reputation does he have?
- What principle governs his behaviour?
- What is the general impression about his personality?

In seeking answers to these questions, the banker will contact sub-contractors, suppliers, architects, engineers and clients who have had some previous association with the contractor. The rigour with which the branch manager pursues his investigation was difficult to ascertain, but it appeared that, in general, the branch managers have limited time to devote to obtaining detailed answers.

Capacity

The items emphasized by the bank in regard to the firm's capacity relate to the management skills of the firm, particularly its key field personnel, the mechanisms established for continuity in leadership of the firm and in the firm's ability to estimate, plan and control individual projects. Information collected includes previous project experience, names of previous clients, types of insurance coverage held, particularly life insurance for key company officers, etc.

This information seems to be gathered through the interview process the bank has with the contractor. The contractor is not required to make the same type of formal written submission to the bank as he is to the surety company in regard to his personnel.

Conditions

Information is gathered by the branch manager pertaining

to general economic trends and their implications for construction, the current labour situation, legal problems, if any, facing the company, the range of diversity in the firm's capacilities, particulars of the firm's contracts, etc. Specific issues examined are treated in Table 4.5.

The bank manager has one major goal in mind when gathering the above information, which is the assessment of the risk which the bank will assume if it extends credit to the contractor. Depending on the degree of risk, the bank may not grant the credit, or, if it is at a high but acceptable leve, an additional interest premium may be charged. The bank is continually conscious of the fact that it stands "last in line" in the event of a default by the contractor -- labourers, material suppliers, the surety, etc., all stand ahead of the bank.

The review procedure used by the bank in assessing a contractor was summarized as follows:

> ". . .there isn't a hard-and-fast rule for anything. You have to take each individual situation, whether it be a builder, whether it be a manufacturer, whether it be an investor or what-have-you. Each situation is isolated and you have to analyze it on its own merit."

Once the bank determines that it is prepared to extend credit to the contractor, the size of the credit line and its cost must be determined.

The crucial aspect in determining the amount of credit (whether it be for the first time or for increasing an already-existing line) is the ability of the contractor to document his working capital needs. A request which is poorly documented will almost invariably be reduced. In order to verify the contractor's request, the bank may determine the working capital requirements itself and, in doing so, it will ask for information pertaining to the manner in which progress payments will be made, the pattern of payments by the contractor to his sub-contractors, suppliers, etc. The specific uses to which the funds requested will be put is also of importance to the bank. In particular, the bank will enquire as to what equipment the contractor is going to purchase in order to execute his projects and what are his plans for the equipment when these projects are completed. Of concern here is whether the working capital needs of the contractor are being distorted because too much equipment is being purchased rather than rented or leased.

Of course, the size of the credit extended to the contractor is also a function of his financial and managerial strengths as well as the quality of the collateral assigned to the bank. One bank officer made the following statement in regard to the amount advanced.

> "I would say that a general rule of thumb to finance a contractor is that you are looking at providing an amount similar to what his working capital position is."

Another guideline found in the literature was stated as follows:

> "I like to keep the loan under three-quarters of his working capital and under one-half of his net worth (equity)."
>
> [24]

In determining the rate to be charged for the credit provided to the contractor, the bank assesses the size of the loan (the larger the loan, generally, the less the rate) and the risk factor as determined through the evaluation of the five C's. In general, the interest rate charged is quoted as prime plus a certain number of points, with the usual spread being one to three points above prime.

4.3.2 Maintaining a Relationship with the Bank

The contractor is required to provide updated financial information to the bank on a regular basis. While no hard-and-fast rules exist, the contractor is required to provide yearly audited financial statements and, on a quarterly basis,

a statement of accounts receivable and contracts schedule of position. Should any of these statements indicate that the contractor is experiencing some difficulty, the bank might then request unaudited interim financial statements as well as requiring, on a monthly basis, a statement of accounts receivable and contracts schedule of position. Any future request for an increase in the company's credit line must be accompanied by a cash flow analysis in order to demonstrate the basis for the amount requested and how it will be repaid.

4.4 NEED FOR IMPROVEMENT OF CONTRACTOR'S REPORTING PRACTICES -- THE BANK'S VIEWPOINT

An attempt was made to determine, from the viewpoint of the bank, what weaknesses exist in the present information-gathering and reporting practices of the contractor.

The bank officers interviewed focused their comments on the process used by the contractor to determine his working capital requirements. Generally, the banks have found that little relation exists between the amount of credit requested and the amount actually needed. They believe that there is a pressing need for much improved cash flow analysis procedures on the part of the contractor and that this need has important implications for the estimating, planning and cost accounting procedures of the firm.

4.5 SUMMARY

An attempt has been made to document the assessment procedures employed by the bank to determine:

(i) whether it should establish a business relationship with a contractor;

(ii) the amount of credit that should be extended; and

(iii) what actions must the contractor take to maintain a relationship, once established.

Also examined was the need for improvement in the contractor's reporting practices, as seen by the bank.

It is clear from an examination of Chapters 3 and 4 that the surety, because of its endorsement of the contractor, conducts a more exhaustive investigation of the various facets of the contractor's organization than does the bank. Except for those branches of a bank which have a construction department, the bank officers dealing with contractors on a day-to-day basis do not have an extensive knowledge of the construction industry in general or the individual contractor in particular. Thus, emphasis tends to be placed on conventional financial criteria and little or no attempt is made to provide the type of counselling to the contractor that the surety may do from time to time. It is felt that the information contained in this chapter could be strengthened by conducting further interviews, particularly in those bank

branches which have a construction department. However, it is difficult at this time to assess what additional information, if any, could be obtained from further interviewing. It would seem, however, that some attempt must be made to convince bank officials of the importance of dicusssing their assessment procedures, as a careful study of them by the contractor would undoubtedly result in some improvements in his management practices, which would benefit not only himself but also the bank.

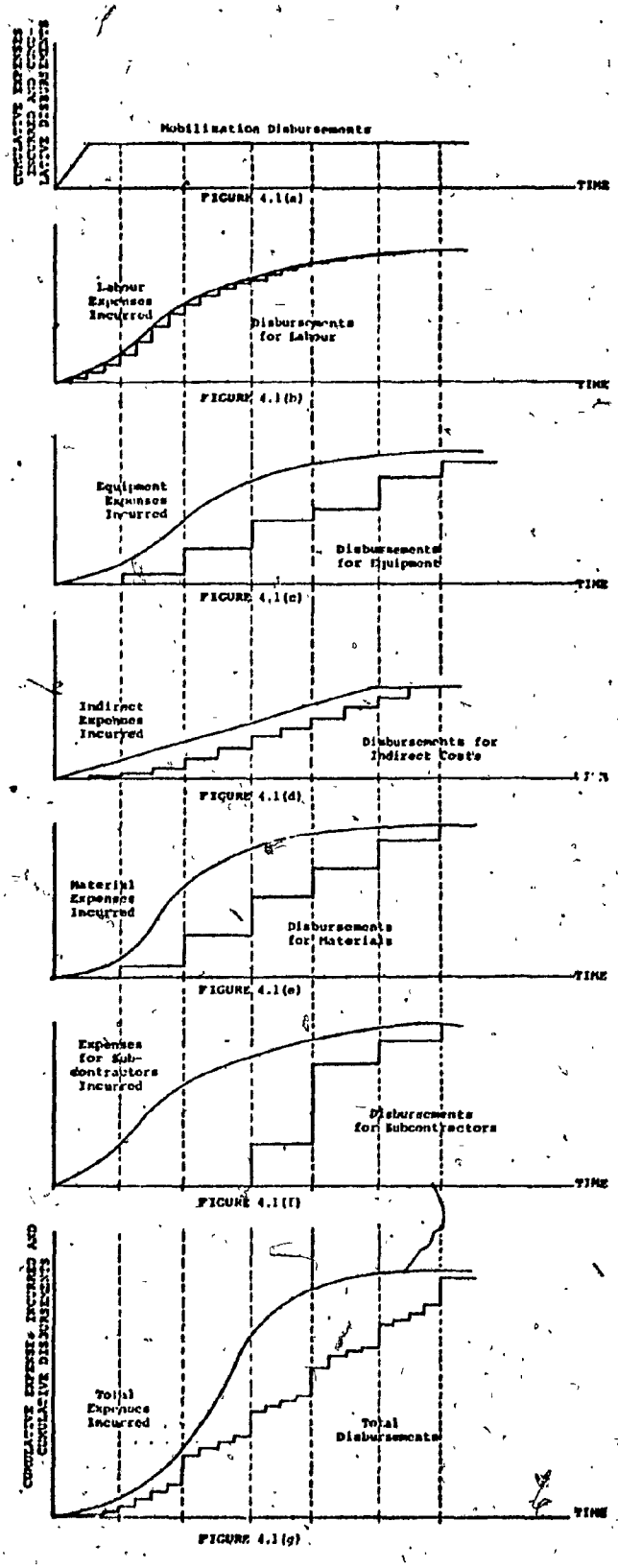

FIGURE 4.1 DETERMINATION OF TOTAL EXPENSES INCURRED AND DISBURSEMENTS MADE BY CONTRACTOR

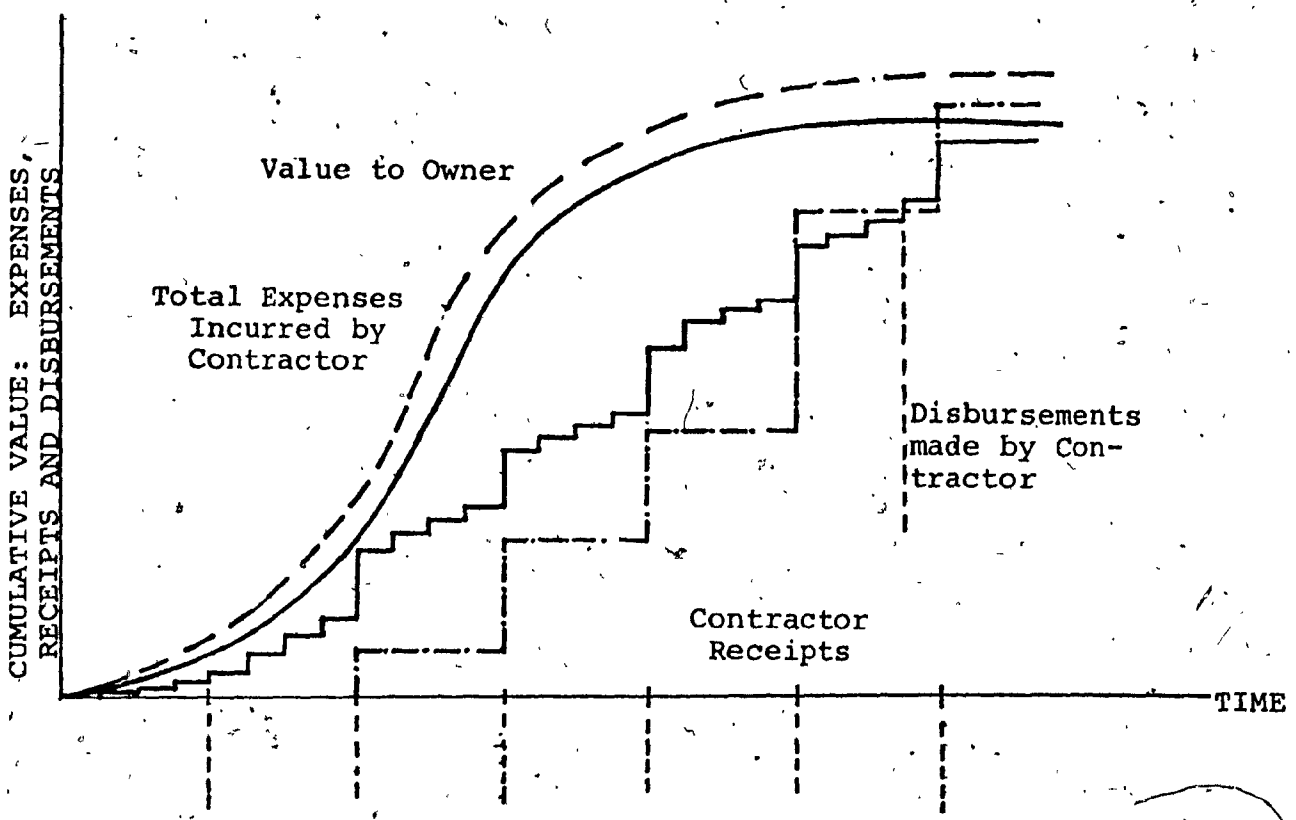

FIGURE 4.2(a)

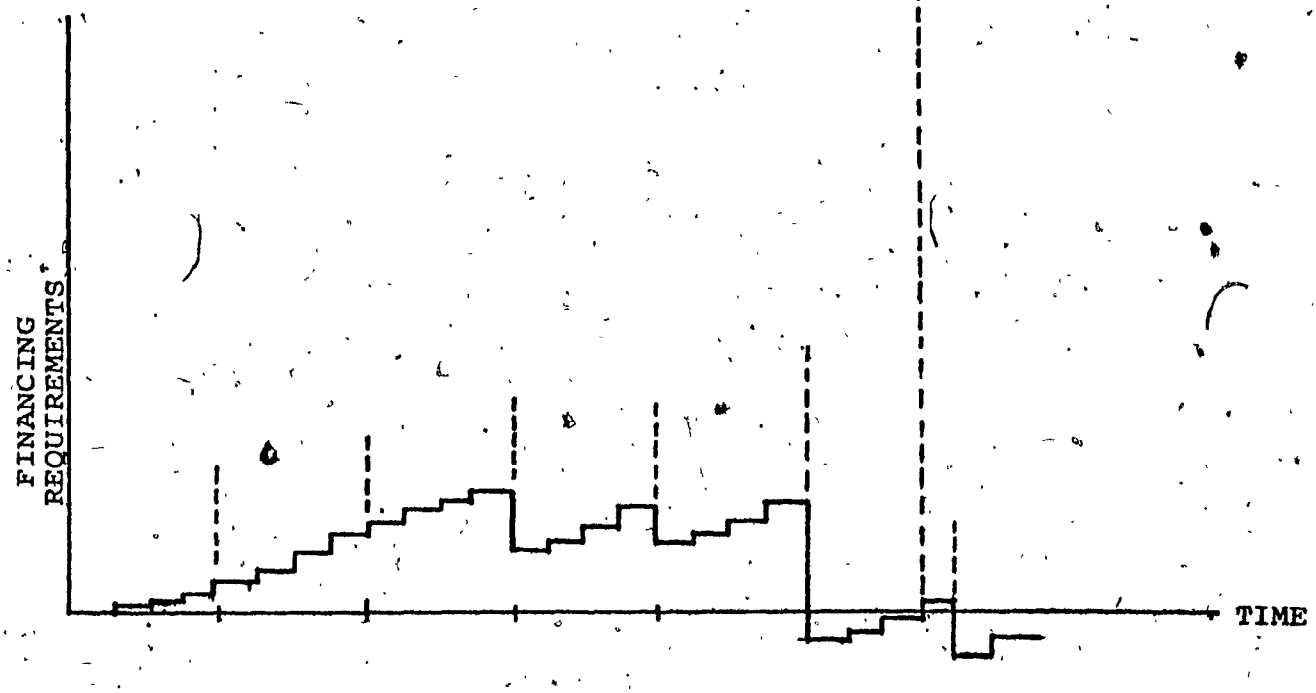

FIGURE 4.2(b)

FIGURE 4.2 DETERMINATION OF PROJECT FINANCING REQUIREMENTS

FIGURE 4.3 LETTER

879-8014

Dear Sir:

Currently underway within the Centre for Building Studies at Concordia University is a research project which has its focus the development of improved management information systems for the general contractor, improved in the sense that they:

(a) optimize the use of information presently available to the firm;

(b) are compatible with the manner in which the firm operates and with the skills of existing personnel;

(c) report the correct and necessary information in a form which can best be interpreted by management, and at a level of detail most appropriate for the individual managers or supervisors who will be using this information;

(d) get this information to the appropriate managers and supervisors both at the time required and the frequency required;

(e) enhance the relationship between the contractor and his banker, surety, and clients.

Of greatest importance to us at this time is your assessment of the *strengths and weaknesses* of present reporting practices of contractors as regards the bank with respect to their short term financing needs.

In regard to item (d) above, we are seeking information regarding the evaluation processes employed by the bank for:

- establishing an initial relationship with the bank and determining the extent of the short term financing credit line the bank will provide for project or interim financing;

- maintaining this relationship and renewing the credit line from time to time;

- increasing the limit of the credit line;

In particular, we are interested in determining, for each of the above aspects of the relationship between the bank and the contractor, the

...2

FIGURE 4.3 LETTER (continued)

following information:

- What information must be provided to the bank and in what specific format, if any;
- Who provides this information;
- How is it verified;
- What evaluation criteria are used in assessing this information.

Attached are several tables which summarize the current state of our knowledge pertaining to this information. We seek your assistance in verfiying the information content of these tables, (simply cross off items which do not apply), in completing them and in providing any supplementary information you deem to be of importance. We would be most appreciative if you would direct your efforts to providing information on the methods of verifications and the evaluation criteria employed by the bank. We would also like to obtain, where possible, typical information collection and evaluation formats used by your company, and a brief description of the qualifications of the bank's personnel engaged in making decisions on behalf of the bank with respect to the general contractor.

Your cooperation in providing the above information is greatly appreciated. When the study is complete, we will be pleased to forward a copy to you.

Yours sincerely,

Alan D. Russell
Associate Director
Centre for Building Studies

Mihalis Kirittopoulos
Research Assistant
Centre for Building Studies

ADR/MK/kg

c.c.

encls.

FORM 601 (3-66)

SHEET No. _____

TO: The Manager,

THE ROYAL BANK OF CANADA

_____ 19__

BRANCH _____ NAME OF CUSTOMER _____

STATEMENT OF ACCOUNTS RECEIVABLE AS AT _____ 19__ AT WHICH DATE LOANS AMOUNTED TO $ _____

NAMES OF DEBTORS (SHOW ADDRESS IF NOT IN LOCAL AREA)	TOTAL	CURRENT	31 - 60 DAYS	61 - 90 DAYS	OVER 90 DAYS	HOLDBACKS	† REMARKS (TO BE FILLED IN BY BANK)
	OMIT CENTS						
SUB-TOTAL							(OVER)

FIGURE 4.4(a) TYPICAL FORMAT FOR STATEMENT OF ACCOUNTS RECEIVABLE

NAMES OF DEBTORS (SHOW ADDRESS IF NOT IN LOCAL AREA)	TOTAL	CURRENT	31 - 60 DAYS	61 - 90 DAYS	OVER 90 DAYS	HOLDBACKS	† REMARKS (TO BE FILLED IN BY BANK)
	OMIT CENTS						
FORWARD							
1. Sub-totals ..... $							
2. *Aggregate of accounts under $_____ $							
3. *NUMBER of Accounts ...	No.	No.	No.	No.	No.	No.	
4. TOTALS $							
Percentage	100 %	%	%	%	%	%	
Total last statement dated _____ DATE $							
Percentage	100 %	%	%	%	%	%	

The undersigned submits the foregoing to be a true statement of accounts receivable as at _____ 19____.

_____
SIGNATURE OF CUSTOMER

*Where considered practical, report accounts preceding a specified amount only, in which case aggregate of amounts within this limit together with number of accounts shall be reported on lines 2 and 3 above.

†Indicate credit rating; whether credit report held and / or submitted. If additional comments are warranted, attach follow sheet.

FIGURE 4.4(b) TYPICAL FORMAT FOR STATEMENT OF ACCOUNTS RECEIVABLE

CONTRACTS SCHEDULE OF POSITION

FORM 2293 (3-76)

GUIDELINES TO COMPLETE:

Column 1 – Show small contracts in a group.
Column 2 – Contract price should include profit.
Column 4 – Ensure that extras have been approved. Obtain copies of approval if necessary.
Column 5 – This figure should include any overhead costs relative to the contract. If not, provide details.
Column 6 – Based on revised contract price.
Column 10 – This figure obtained by subtracting Column 7 from Column 5.

Other Payables - Include withholding taxes, accrued wages, current portion of term debt, etc.

BRANCH	DATE
NAME OF BORROWER	

CONTRACT DESCRIPTION (1)	COMPLETION DATE (2)	CONTRACT PRICE (3)	REVISED CONTRACT PRICE (4)	COST TO DATE (5)	COST TO COMPLETE (6)	BILLED TO DATE (7)	EARNED BILLINGS RECEIVED (8)	EARNED BILLINGS DUE (9)	WORK IN PROGRESS (10)	HOLD-BACKS (11)	DATE HOLDBACKS DUE (12)	ORIGINAL PROFIT FORECAST (13)	REVISED PROFIT FORECAST (14)

BALANCE OF CONTRACT PRICE – LINE 4 MINUS LINE 7

OBTAIN ALL FIGURES FROM COMPANY RECORDS

CONTRACT POSITION				CURRENT POSITION			
CASH IN BANK		TRADE PAYABLES		CASH IN BANK		TRADE PAYABLES	
RECEIVABLES (COL. 8)		OTHER PAYABLES		RECEIVABLES (COL. 9)		OTHER PAYABLES	
HOLDBACKS (COL. 11)		BANK LOAN		WORK IN PROGRESS (COL. 10)		BANK LOAN	
		COST OF COMPLETION (COL. 6)					
BALANCE OF CONTRACT PRICE (COL. 7A)		SURPLUS/DEFICIT		HOLDBACKS (COL. 11)		SURPLUS/DEFICIT	

FIGURE 4.5 TYPICAL FORMAT FOR SCHEDULE OF CONTRACT VALUES

Kind of Information	Evaluation
1. Audited financial statements of last 4-5 years (a) Balance Sheet (b) Income Statement (c) Source and use of funds	1. In evaluating the contractor's financial statements, the bank tends to focus on criteria which reflect profitability and liquidity. Certain financial ratios may be checked which include: - Net profit to revenue before and after taxes - Net profit to equity before and after taxes - Profit to working capital, before and after taxes - Net profit to total assets, before and after taxes - Current assets to current liabilities - Cash to current liabilities - Fixed assets to equity Other questions asked may include: - What is the contractor's working capital? - Do his debts exceed his working capital? - Is the working capital all tied up in deferred profits or current contracts? - What are his O/H expenses? - What is his accounting method employed? - Is the contractor paying his taxes on time? - Is he taking advantage of discounts? - How is the contractor's trend of debt, profit, or equity?
2. A statement of accounts receivable (aged)	2. Attention is focused on the identity of debtors and on the length of time the debt has been outstanding.
3. Contracts schedule of position: (a) Contract description (b) Completion date (c) Contract price (d) Revised contract price (e) Cost to date (f) Cost to complete (g) Billed to date (h) Earned billings (i) Work in progress (j) Holdbacks (k) Date holdbacks due (l) Original profit forecast (m) Revised profit forecast	3. Attention is focused on: the extent of over-billing by the contractor; the profitability of individual contracts; the effectiveness of the firm's estimating and control processes.

TABLE 4.1 ESTABLISHING A RELATIONSHIP WITH THE BANK -- EXAMINATION OF CAPITAL

Kind of Information	Evaluation
4. Cash flow projection	4. The bank is interested in examining the process used by the contractor to determine his financing requirements. Further, the cash flow projection may be used to determine the frequency with which the contractor will "clean up" his credit line.

TABLE 4.1 ESTABLISHING A RELATIONSHIP WITH THE BANK -- EXAMINATION OF CAPITAL (continued)

Kind of Information	Evaluation
1. Life insurance for owner(s) and key individuals.	Personal statement of affairs of the owner(s) and key individuals, showing their assets and liabilities. Investigation of the firm's clients.
2. Personal guarantee of owner(s) and key individuals.	
3. Indemnity of allied and affiliated companies.	
4. Current Accounts Receivable	

TABLE 4.2 ESTABLISHING A RELATIONSHIP WITH THE BANK -- EXAMINATION OF COLLATERAL

Kind of Information	Evaluation
1. How honest is the contractor? 2. What reputation does he have? 3. What principles govern his behaviour? 4. General impressions about him?	The bank manager or his delegate attempts to contact sub-contractors, suppliers, the surety, previous clients, architects, engineers, etc., regarding the previous performance and behaviour of the contractor.

TABLE 4.3 ESTABLISHING A RELATIONSHIP WITH THE BANK -- EXAMINATION OF CHARACTER

Kind of Information	Evaluation
1. Historical Data (a) Past experience with regard to type and size of construction undertaken (b) List of major contracts completed in the past (c) Type of contractor and geographical area in which he has been operating	Emphasis is placed on: (i) Management skills of front-line personnel, such as field superintendents; (ii) Mechanisms for continuity in the firm. Of importance is the distribution of ages for key personnel.
2. Contractor's Operations (a) Key people in the organization; their educational background and experience (b) How efficient is the cost accounting system? (c) Does the contractor know his direct and indirect overhead cost? (d) Does the contractor know how to estimate well? (e) Is the contractor up-to-date in his management methods? (f) Does the contractor know how to supervise and monitor his job? How quickly can he tell if something is out of line?	

TABLE 4.4 ESTABLISHING A RELATIONSHIP WITH THE BANK -- EXAMINATION OF CAPACITY

Kind of Information	Evaluation
1. Economy's trends	1. The branch manager is responsible for assessing trends in the economy which may affect the contractor; e.g., total volume of business versus number of contractors -- how hungry are contractors? fluctuations in prices of key inputs such as labour, materials, equipment and their availability.
2. Labour relations situation	2. Of concern here is the stability in the present labour situation. When are contracts up for renewal? What kind of relations does this firm enjoy with labour? What happens if the firm experiences a strike on its project? Can it survive? Also, do any shortages exist for specific labour types. If so, what are the implications for the firm's projects.
3. Legal conditions affecting the particular company.	3. Are the company's officers litigious? Are there any outstanding claims against the company? Is access to some of its assets (e.g., holdbacks) blocked by ongoing legal proceedings?
4. Marketing trends -- total market for the company's product 5. Ability of the company to adapt itself to changes	4.,5. Is the company sufficiently diversified (management skills, equipment, etc.) so as to be able to bid on different types of jobs, or is it so highly specialized (e.g., schools) that it will be seriously affected by a major drop in demand for its speciality?
6. Duration of projects	6. Projects which are of long duration have major elements of risk. What can be done to minimize these risks?
7. Identity of firm's clients	7. Of interest here is the financial strength of the various clients of the firm. This information aids in the assessment of the risks assumed by the firm and by the bank.
8. Particulars of the firm's contractual obligations	8. Emphasis is focused on escalation clauses, terms for progress claims and payment, procedures for claims for extras, release of holdbacks, liquidated damage clauses, etc.

TABLE 4.5 ESTABLISHING A RELATIONSHIP WITH THE BANK -- EXAMINATION OF CONDITIONS

CHAPTER 5

A CASE STUDY

CHAPTER 5

A CASE STUDY

5.1 INTRODUCTION

If the designers of management information systems or reporting systems are to develop improved systems, improved in the sense that they:

(i) optimize the use of information presently available to the firm;

(ii) are compatible with the manner in which the firm operates and with the skills of existing personnel;

(iii) report the correct and necessary information in a form which can best be interpreted by management and at a level of detail most appropriate for the individual managers or supervisors who will be using this information;

(iv) get this information to the appropriate managers and supervisors both at the time required and the frequency required; and

(v) enhance the relationship between the contractor and his banker, surety and clients;

then the designers of such systems must possess a fundamental understanding of how the users of their systems are organized, how they interact with external agencies, the nature

of the product of the company, what data is collected during the execution of a project, what use is made of this data, who uses it, etc.

The purpose of this chapter, in conjunction with the previous ones, is to help designers of information systems develop an understanding of the above issues by:

(i) documenting the manner of preparation and presentation of external reports for use by the client, the bank, the surety, and of internal reports for use in generating these external reports and for internal financial control, for a medium-sized construction company;

(ii) presenting the company's assessment of the strengths and weaknesses of their existing information systems and determining how improvements might be made.

To achieve these objectives, contact was made with a Quebec-based construction company of medium size. A combination of interviews and questionnaires was used to obtain information relevant to the objectives stated above. These responses were then synthesized and the resulting text, which formed the basis for this chapter, was given to the company for verification. The exceptional cooperation given by the officers of this company made this exercise both a useful and a rewarding one. It must be noted, however, that the time that senior management of such a company can devote to a study such as this is limited by their extensive workloads,

and hence it is virtually impossible to obtain answers to every question in an optimal fashion.

5.2 DESCRIPTION OF THE COMPANY

The firm is a Montreal-based general contracting company. It is affiliated with a large integrated engineering firm, and is consequently somewhat more sophisticated in its management procedures than other consturction companies of similar size. The main products of the firm are industrial, commercial and institutional buildings, with the yearly volume being some 25 million dollars. Approximately 50% of this work is by means of invited or public tender call, and is based on lump sum contracts. The balance of the work undertaken is negotiated and executed using lump sum contracts or cost-plus contracts or fixed-fee contracts.

At any one time, the firm is engaged in 11 to 15 projects, ranging in individual project value from 50,000 to 7,000,000 dollars, with an average value of 2,500,000 dollars. The average duration of a project is 10-12 months, with a range of 1 to 18 months. Approximately 85% of a typical commercial or institutional job and 50% of a typical industrial job is performed by sub-contractors.

The management organization of the office, exclusive of clerical help, consists of 25-30 people; and it consists of the following departments with the heads of these departments having the following qualifications, respectively:

	DEPARTMENTS	QUALIFICATIONS
(a)	Finance Dept.	Chartered Accountant (Secretary-Treasurer)
(b)	Contract Dept.	Degree in Engineering (Vice-President of Contract Department)
(c)	Personnel Dept.	No particular education (labour law, union law, etc.) (Vice-President of Personnel Dept.)
(d)	Estimating Dept.	Degree in Engineering (Chief Estimator)
(e)	Marketing Dept.	Commerce degree (Vice-President of Marketing)

Figure 5.1 illustrates the organizational hierarchy of office and site staff for a typical job in excess of five million dollars.

A field clerk will be present on site if the job has a high labour content in terms of the general contractor's own forces, if the job is not highly sub-contracted or if the job is out of town. The presence of a full-time site safety officer is a function of job size. Normally, jobs in excess of five million dollars have their own site safety officer while those of smaller size are serviced by a safety officer who is responsible for 2 - 3 jobs and who is based at head office. The various site foremen are responsible for compiling daily time cards for their crews and submitting

them to the field superintendent. The field engineer is responsible for determining quantities of work performed by direct measurement and in determining the efficiency of the various equipment spreads required for the job. The general superintendent visits the site from 1-3 times per week for purposes of assessing progress and for general problem-solving. The general superintendent may be in charge of up to three jobs simultaneously, depending on size. The contract coordinator is responsible for negotiating contracts, and documenting change orders as well as performing basic coordination of all the paperwork associated with the project. The project manager has overall responsibility for the project and interfaces with top management as well as the client.

For this firm, the typical project manager is an engineer. The general superintendent is a seasoned field superintendent who qualifies for this position because of his experience, his ability to write reports, his ability to learn quickly, and his proven ability to solve problems. In general, the field superintendent is a tradesman who is capable of organizing men and who can read drawings very well.

The objectives of the firm, in order of priority, are:

1. Percentage return on volume, not less than some predetermined number.

2. Development of a reputation for timely completion of projects within budget.

3. Maximization of return in investment.

4. Attainment of a specified rate of annual growth in dollar volume.

5. Diversification into other forms of construction.

The company uses the critical path method (CPM) for project planning, scheduling and control on occasion only. Its use of computers on a regular basis is restricted to payroll and estimating, although it does use computerized cost accounting for selected jobs. Its cash flow planning and control system is entirely manual.

5.3 RELATIONS WITH THE CLIENT

Attention was focused on two distinct phases of the relationship between the contractor and the client; these being the pre-construction phase and the construction phase:

5.3.1 Pre-Construction Phase

An attempt was made to determine what information was prepared by the contractor for submission to the client following the award of the contract but prior to initiation of construction. Information prepared for his own use in this phase is dealt with in a later section.

The information provided to the client in the pre-construction phase consists of:

(a) A schedule of contract values;

(b) A construction schedule;

(c) A project cash flow projection;

(d) A list of sub-contractors;

(e) Unit prices and/or cost-plus percentages for extra or deleted work.

The format for the schedule of contract values is shown in Figure 5.2. It is initially submitted to the client showing only the breakdown of the job both by description and value. This breakdown, particularly in terms of cost, must be agreed upon by both the client and contractor before construction starts. The schedule of contract values forms the basis for the monthly progress claims submitted by the contractor, once work begins.

A job schedule in the form of a bar chart is submitted to the client at the outset. Its main purpose, from the client's viewpoint, is to inform him of when different phases of the project are expected to be complete. It also provides, along with the schedule of contract values, the basis for a project cash flow projection. This projection is prepared by the contracts department and is submitted to the owner so that he may arrange for the appropriate interim financing, if required.

It should be noted that the schedule of contract values and the project schedule are based on the detailed job budget and project schedule (section 5.5) prepared by the contractor for his own use during the construction phase.

Also submitted to the owner at this stage in the form of a letter is a list of sub-contractors associated with the job as well as a list of unit prices (cost plus or percentage) and/or total values for extra or deleted work.

5.3.2 Construction Phase

The information provided to the client in the construction phase consists of:

(a) Contract change order quotations;
(b) Extra work reports;
(c) Progress claim summaries (monthly);
(d) Schedule of contract values (monthly);
(e) Minutes of job site meetings;
(f) Updated construction schedules.

Invariably, changes in the scope of the work occur. When this happens, the contractor submits a contract change order quotation (Figure 5.3) which provides a description of the change and states the cost of the change in terms of labour, material and equipment plus a percentage and/or a lump-sum figure. Also included in this quotation is an estimate of the impact this change order will have on the project schedule. Once approved, this change order item is added to the schedule

of contract values. Figure 5.4 shows the form used (Extra Work Report) to document the labour, material and equipment used for change orders charged on a cost-plus percentage basis.

Each month, an updated schedule of contract values is prepared by the contract department. One week before the progress claim is due to be submitted to the owner, the contractor sits down with the owner or his agent and they agree on what the likely percentage of completion will be for each item on the schedule of contracts by the end of the month when the claim must be submitted to the owner. This process has the advantage that it minimizes the length of the legitimate time lag between receipt of the claim by the owner and subsequent payment to the contractor. A progress claim summary, Figure 5.5, is submitted along with the schedule of contract values. This summary sets forth the total value of work performed to date, which includes work performed in terms of the original contract and in the form of change orders, the value of work performed since the last billing, and an allowance for holdbacks. The one percent per month charge on any outstanding balance is meant to minimize the time lag between receipt of the claim and its payment by the client.

The personnel associated with the preparation of the monthly progress claim summary and schedule of contract values are as follows: the general superintendent collects the necessary

the job done as fast and economically as he could. . . . However, just charging equipment to a cost code doesn't get any feedback on the problem of equipment productivity."

To overcome this problem a simple form was designed for documenting equipment productivity, and the field engineer was given the responsibility of completing it. Different criteria are used for assessing different equipment items and completion of the form entails circling the appropriate criteria or information item. The information obtained from the form was described as follows: ". . .So there's a bulldozer and a backhoe, and we want to determine the slope they are working on. . .he just has to circle these things. Is the soil hard, medium-hard; how is the digging? Here we are getting about 55 minutes per hour, which is pretty good. Trucks -- here's the trucks. There are five ten-wheeler trucks on the job, each one loading every 12 minutes. . ."

A copy of the format used for equipment productivity measurement was not made available for inclusion in this report.

Each week, a labour cost report is prepared which summarizes the labour cost for each code number per day, the total for the week, the cumulative values to date, the account budgeted, the amount of work done this week, to date and budgeted, unit costs this week, to date, budgeted and man-hours this week, to date and budgeted. The documentation of man-hours is particular important on jobs such as machinery installation, where the job estimate is developed using mainly man-hours as a basis. The source document for the weekly report is the

foreman's daily labour distribution sheet. The field engineer is in charge of determining the quantities of work performed by direct measurement. No specific format is used for recording the job content.

The weekly report is prepared at the project site and it must be completed by the Wednesday of the following week.

Using the weekly labour cost reports and the job budget, a Monthly Cost Report is prepared (Figure 5.14). It records all costs incurred on a cumulative basis, broken down by cost code into labour, material and sub-trade elements. Quantities of work completed are also recorded, and are expressed either as a percentage of completion or on a unit base depending on the nature of the cost item. All general conditions or overhead items are entered on the basis of percentage completed.

The material and sub-trade commitments, as determined from purchase orders and sub-contracts, are also recorded, including quantities where applicable.

Using this information, the projected final cost of each code is estimated for comparison to the Job Budget to determine projected cost savings or overruns. A summary sheet showing these savings or overruns by major code series and comparing to the previous report is also prepared for use by top management.

The monthly report is prepared at the project site in much the same manner as the weekly labour report. However, the projected final cost is carefully scrutinized at the Head Office by the General Superintendent or Project Manager, who may be more aware of pending extras or claims having a bearing on the projected savings or overruns. The monthly report must be completed by the 10th of the following month.

The various reports generated in the construction phase are reviewed as follows. The General Superintendent and Project Manager review the various daily, weekly and monthly reports prepared. The monthly report is then circulated to the Vice-President -- Operations, the President and the Secretary-Treasurer. The latter uses the information provided to prepare his monthly financial statements.

5.5.3 Reporting to Top Management

Every month, top management receives seven reports for purposes of overall financial control of the firm. This group of reports is constituted as follows:

1. A Comparative Balance Sheet (Figure 5.6)
2. A Statement of Income and Expenses (Figure 5.7)
3. A Forecast Summary Statement of Income and Expenses (Figure 5.15)
4. A Six-Month Company's Cash Flow Projection (Figure 5.16)
5. A Statement of Accounts Receivable (Aged) (Figure 5.17)

6. A Statement of Holdbacks Receivable (Figure 5.18)
7. A Schedule of Contracts (Figure 5.8)

Taken together, these reports permit management to anticipate and plan for the future, and to identify current and potential problems in sufficient time for corrective action to be initiated. Back-up reports available to top management include a detailed breakdown of overhead expenses, monthly financial forecast summaries for each project, monthly cost reports and job budgets.

The use of most of these statements is self-explanatory. With respect to the Statement of Income and Expenses, office overhead expenses are broken down on a departmental basis. Included in these expenses are salaries of executives and office staff, office rent, office insurance, legal expenses, advertising, travel, etc. Not only is the total expenditure on salaries of head office personnel of importance to top management, but of equal or more importance is the manner in which office personnel spend their time. Consequently, as a supplement to monthly financial statements, all head office personnal are required to maintain a log of their time in order to determine which jobs are taking most of the people's time. ". . .There are certain jobs that take very little head office time and others that take a lot of head office time. So you would like to know that. It gives you an indication of what type of jobs you should be going after, how many of a certain job type you can afford to

take before you will have to increase your head office staff."

An aggregated format of income and expenses is used for purposes of forecasting the likely net income of the company for a six-month period (Figure 5.15).

A six-month cash flow projection is made using a source and application of funds statement (Figure 5.16). The secretary-treasurer is responsible for preparing this statement each month. The information required for preparation of this statement is collected as follows: (i) for each project, a cash flow projection is provided by the project manager (Section 5.5.1); (ii) the holdback percentages, security deposit requirements and payment terms for each project are ascertained from the contract; and (iii) forecasts for new work, capital expenditures and head office overheads are provided by the company president.

The main use of the cash flow projection is internal ". . . but would be useful, if necessary, for review by banks or sureties when assessing lines of credit requirements and bonding limits."

". . . The projection of cash flow and working capital requirements is extremely important for a contractor since financing availability is, in some cases, the most important consideration in determining whether or not to tender a project. Failure to recognize financing limitations could jeopardize the operations of an otherwise successful contractor. To attain the objectives of the firm, proper cash planning is

essential."

The statement of aged accounts receivable (Figure 5.17) summarizes the status of the contractor's clients' accounts and serves as a basis for determining whether action should be initiated on delinquent accounts. It is also required for the preparation of realistic cash flow forecasts, by the bank and surety, and by top management for purposes of determining which clients the company should do repeat work for, should the opportunity arise.

The schedule of contracts (Figure 5.8) serves to inform top management of the current status of each of the company's ongoing projects. It provides an initial basis for top management to query the project management staff on what corrective action is being pursued or should be pursued for projects whose profitability appears to be less than that expected or desired. As back-up information, with respect to a particular project, top management may also request the financial forecast summary (Figure 5.19) and the monthly cost report (Figure 5.14). The schedule of contracts prepared for use by top management is identical to that prepared for the surety.

5.6 STRENGTHS AND WEAKNESSES OF EXISTING REPORTING SYSTEM

In general, the company was satisfied with the performance of its reporting system. However, when asked how they would allocate resources to improve the present system, should they be given some, the individuals interviewed focused on

the issue of labour productivity.

In order to improve the control of their own labour forces, they desire more information regarding crew sizes, work conditions and output, If this additional information could be obtained, and provided it could be processed quickly, ten it was felt that more effective control actions could be initiated. In this regard, the company is developing, in conjunction with the parent company, a computerized labour cost reporting system. It was also felt that the development of a labour productivity reporting system would provide the basis for improved estimates for new work.

5.7 SUMMARY

In this chapter, an attempt has been made to document the reporting practices of a medium-sized building contractor. The reporting practices followed by this company are close to the textbook ideal [ ], mainly because of the company's affiliation with a large, sophisticated engineering firm. Consequently, they should not be construed as typical of other similar-sized companies, and indeed this was found to be the case upon interviewing other comparably-sized firms. It is impossible to attribute the success of the firm examined wholly to its present reporting practices. It is possible to say, however, that the reporting practices of the firm provide the basis for the effective control of individual projects, in terms of time, cost and content, as well as for the overall financial control of the company.

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Further, they provide the basis for a business-like relationship with the client, the bank and the surety. Whether these practicies result in increased profitability could not be determined. Their use did show, however, that theory can be effective in practice, if properly applied.

The contribution of this chapter lies in identifying:

(i) the manner in which basic data is collected, recorded, processed, and used for individual project control;

(ii) the flow and use of information within the firm and without;

(iii) the information required for financial control of the company; and

(iv) the roles of various individuals with respect to project and company control.

The information presented in this chapter was obtained by an extensive interview and questionnaire process with the secretary-treasurer of the company and one of the company's project managers. The cooperation afforded by these individuals was excellent. However, the difficulty of obtaining information by way of interviews and questionnaires should not be underestimated. It is a lengthy trial-and-error process, and one which is difficult to control. However, the understanding developed through such a process is fundamental to the development of practical reporting systems for contractors.

Given the opportunity to continue the interview process, the next step would be to discuss with several company personnel their use of information and how the current deficiencies in the present reporting system could be corrected. This step, coupled with the information gathered and reported to date, would provide the basis for the development of an improved reporting system.

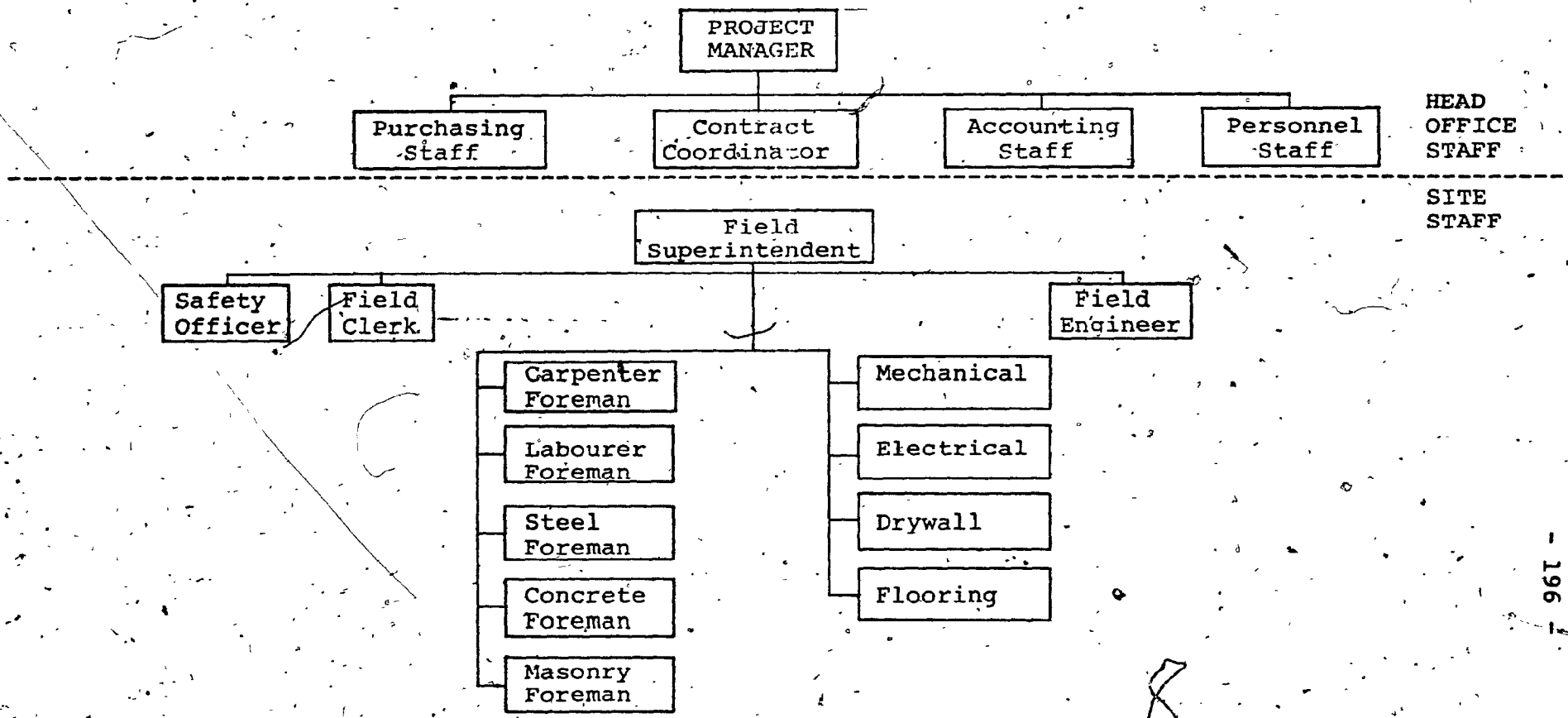

FIGURE 5.1 TYPICAL ORGANIZATION CHART FOR A JOB OVER $5 MILLION

COMPANY IDENTIFICATION

Date _____

Page _____ of _____

Item	Description	Total Value	% Complete		Total Value To Date
			Previous	To Date	

FIGURE 5.2 SCHEDULE OF CONTRACT VALUES

COMPANY IDENTIFICATION

CONTRACT CHANGE ORDER QUOTATION

TO _____ QUOTE NO. _____

_____ DATE _____

_____ JOB NO. _____

ATTN: _____ PROJ. DESC. _____

_____ _____

GENTLEMEN:

This CHANGE ORDER QUOTATION includes all Material, Labour and equipment necessary to complete the following work.

____ The work below to be paid for at actual cost of labour, materials and equipment, plus ___ percent (___%)

____ The work below to be completed for the sum of _____

_____ ($_____).

The work below will add/deduct _____ days to our schedule.

The covered by this quotation shall be performed under the same terms and conditions as that included in the original contract unless stated otherwise.

QUOTATION APPROVED

by _____ Signed _____

_____

FIGURE 5.3 CONTRACT CHANGE ORDER FORM

COMPANY IDENTIFICATION

EXTRA WORK REPORT

Customer's Name _____ Sheet No. _____

Address _____ Date _____

Order No. _____ Job _____

Description of work _____ Cost Code _____

LABOR

Name	Badge Number	Occupation	Hours	Rate	Amount

MATERIAL

Description	Unit Price	Amount

Field Accountant _____ Customer's Approval _____

FIGURE 5.4 EXTRA WORK REPORT FORM

COMPANY IDENTIFICATION

PROGRESS CLAIM SUMMARY

Job No. _____ Date _____

Claim No. _____

IN ACCOUNT WITH

_____

_____

_____

RE: _____

Covering work completed up to and including: _____

_____

	ORIGINAL CONTRACT	CHANGE ORDERS	TOTAL
To Date: Total Contract Value	$	$	$
Value of Work Completed			
Deduct: Holdback ___% Less ____			
Deduct: Previous Claims			
Amount of this claim	$	$	$
This period: Value of Work Completed	$	$	$
Deduct: Holdback ____%			
Add: Application for Holdback			
AMOUNT OF THIS CLAIM - AS ABOVE	$	$	$

NOTE: All accounts become due and payable on or before _____

Interest will be charged on every overdue account at the rate of 1% per month.

FIGURE 5.5 PROGRESS CLAIM SUMMARY

COMPANY IDENTIFICATION

COMPARATIVE BALANCE SHEET
(197 -- in '000's)

	Jan. 1	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
ASSETS													
Current													
- Cash													
- Accounts Receivable													
- Holdbacks Receivable													
- Work in Progress													
- Deposit on Contract													
- Equity in Joint Venture													
Fixed Assets at Cost													
Less: Accumulated Depreciation and Amortization													
Goodwill													
LIABILITIES													
Current													
- Bank Loan													
- Accounts Payable & Accrued Expenses													
- Advance from Parent Company													
- Holdbacks Payable													
- Income Taxes Payable													
Deferred Income Taxes													
Shareholders' Equity													
Capital Stock issued													
Retained Earnings													
- Balance -- January 1, 197_													
NET INCOME (LOSS) FOR PERIOD													

FIGURE 5.6 A COMPARATIVE BALANCE SHEET STATEMENT

COMPANY IDENTIFICATION

Statement of Income and Expenses

	Budget	Actual	Budget	Actual	Year Ending December 31, 197 Budget	Forecast	Actual
Revenue							
- Construction							
- Management Fees							
Profits							
- Construction							
- Management Fees							
General Expenses							
- Administration							
- Personnel & Services							
- Special Benefits							
- Finance & Accounting							
- Estimating							
- Contract Department							
Net Income From Operations							
Profit Sharing							
Amortization of Goodwill							
Net Income before Income Taxes							
Capital Gains							
Income Tax							
NET INCOME							

FIGURE 5.7 STATEMENT OF INCOME & EXPENSES

COMPANY IDENTIFICATION

Schedule of Contracts (in 1000's)

As at _____ 19__

CONTINGENCY		JOB DESCRIPTION			Original	Revised	Billings	Costs	Estimated	Billings	GROSS PROFITS					
Last Month	This Month	Owner	Cont. No.	Basis	Contract Price	Contract Price	to Date	to Date	Costs to Complete	in Excess of Costs	Original Estimate	Last Month	This Month	Taken in Prior Year	To date in Current Yr.	BALANCE

FIGURE 5.8 SCHEDULE OF CONTRACTS

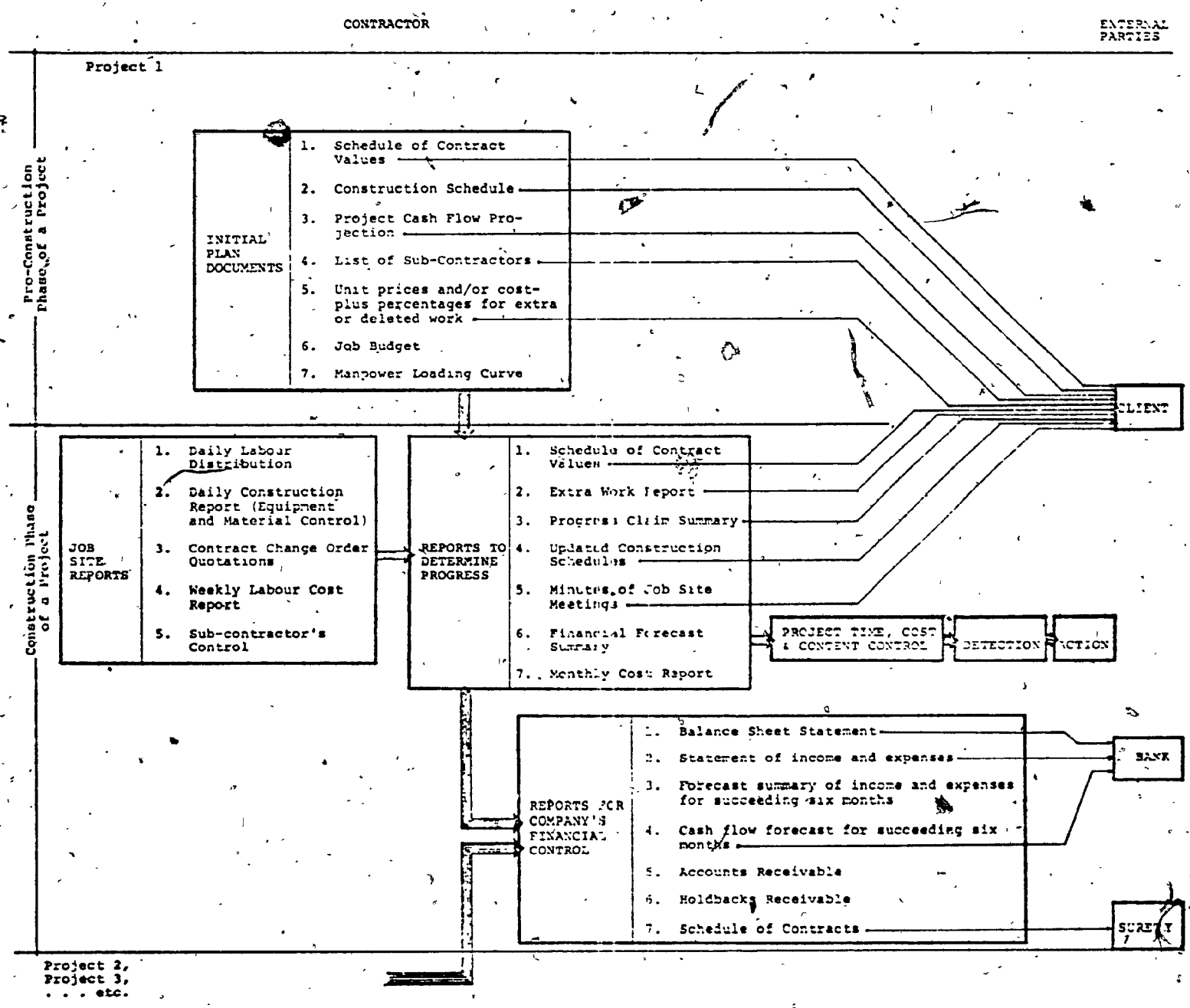

FIGURE 5.9 SEQUENCE OF REPORTS GENERATED FOR COST, TIME, CONTENT CONTROL OF A PROJECT, COMPANY'S FINANCIAL CONTROL AND REQUIRED REPORTS FOR EXTERNAL PARTIES

COMPANY IDENTIFICATION

Job Budget

Page _____ of _____

Date _____

By _____

Job Number _____

Name _____

Cost Code	Description	BUDGETS				Unit	Quantity	UNIT COSTS				REMARKS
		Labour	Material	Sub	Total			Lab	Mat	Sub	Total	

FIGURE 5.10 JOB BUDGET

COMPANY IDENTIFICATION

Foreman's Daily Labour Distribution

Date _____

Job Number _____

Badge No.	HOURS WORKED Reg.	1-1/2	2	Total Hours	Rate	Wages

FIGURE 5.11 FOREMAN'S DAILY LABOUR DISTRIBUTION REPORT

DAILY CONSTRUCTION REPORT

JOB NO. ______

PROJECT ______ DATE ______

LOCATION ______ WEATHER ______ TEMPERATURE AM PM

ARCHITECT ______ OWNER ______ SUBMITTED BY ______

CODE NO.	WORK CLASSIFICATION	[illegible]	[illegible]	[illegible]	[illegible]	TOTAL [illegible]	DESCRIPTION OF WORK
	General Conditions						
	Site Work: Demolition						
	Excavation & Dewatering						
	Caissons & Piling						
	Drainage & Utilities						
	Roads, Walks & Landscaping						
	Concrete: Formwork						
	Reinforcing						
	Placing						
	Precast						
	Masonry: Brickwork						
	Block & Tile						
	Stonework						
	Metals: Structural						
	Decks						
	Miscellaneous & Ornamental						
	Carpentry: Rough						
	Finish						
	Moisture Protection: Waterproofing						
	Insulation						
	Roofing & Siding						
	Doors & Windows						
	Glass & Glazing						
	Finishes: Lath, Plaster & Stucco						
	Drywall						
	Tile & Terrazzo						
	Acoustical Ceilings						
	Floor Covering						
	Painting & Wallcovering						
	Specialties						
	Equipment						
	Furnishings						
	Special Construction						
	Conveying Systems						
	Mechanical: Plumbing						
	Heating, Ventilating & Air Condit.						
	Electrical						

[illegible]

FIGURE 5.12A DAILY CONSTRUCTION REPORT

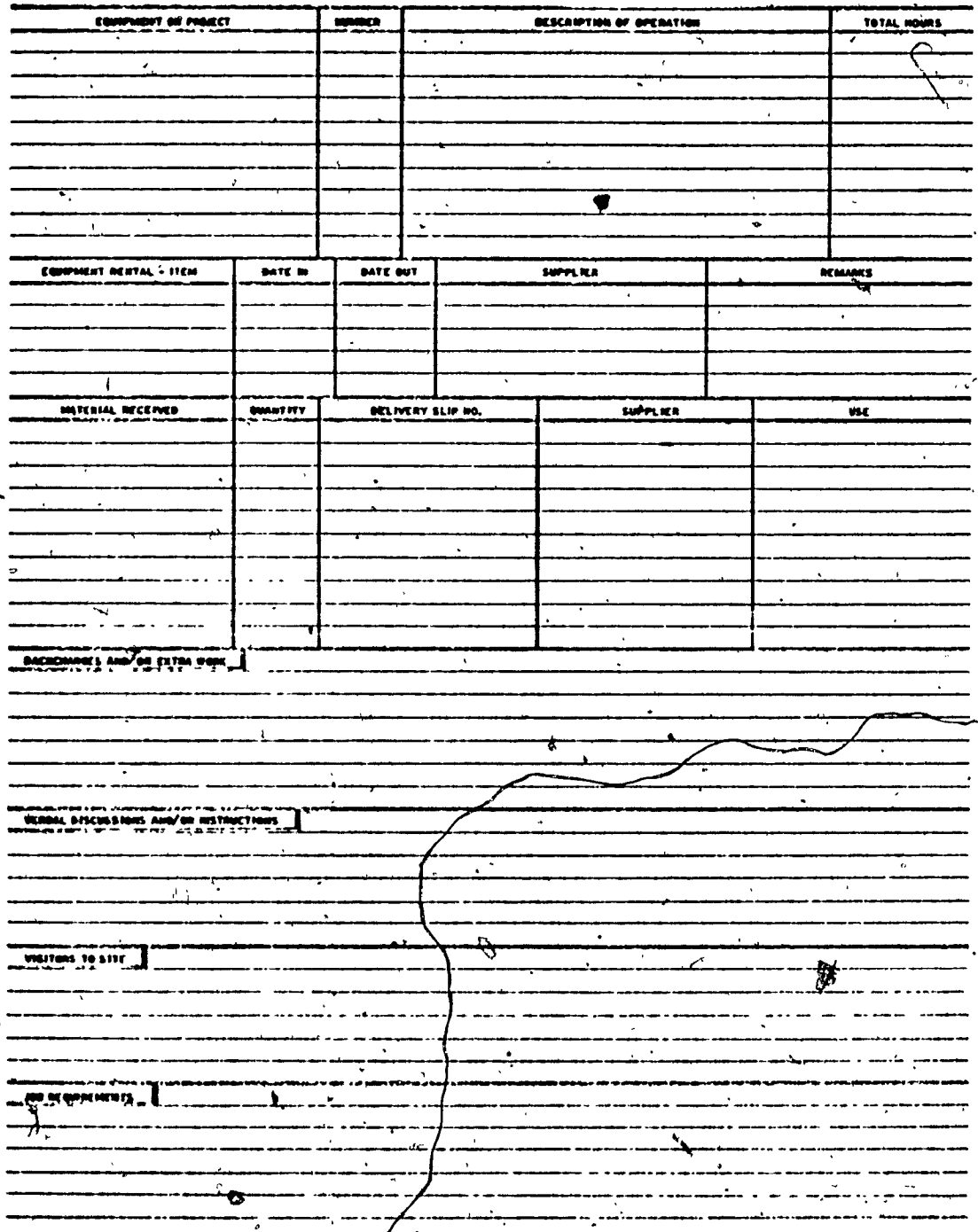

FIGURE 5.12B DAILY CONSTRUCTION REPORT

Light copy

COMPANY IDENTIFICATION

Job Name _____ Weekly Labour Cost Report Number _____

Job Number _____ Sheet _____ of _____

Week Ending _____

DAY		TOTAL COST	ENTER CODE NOS. BELOW AND POST COST TO NEAREST DOLLAR																	
Burden																				
Sunday																				
Monday																				
Tuesday																				
Wednesday																				
Thursday																				
Friday																				
Saturday																				
TOTALS	This Week																			
	Previous																			
	To Date																			
	Budget																			
QUANTITIES	This Week																			
	To Date																			
	Budget																			
UNIT																				
UNIT COST	This Week																			
	To Date																			
	Budget																			
MAN-HOURS	This Week																			
	To Date																			
	Budget																			

Field Accounting _____ Field Engineer _____ Superintendent _____

FIGURE 5.13 WEEKLY LABOUR COST

COMPANY IDENTIFICATION

Job Number _____ Monthly Cost Report Page _____ of _____

Month Ending _____ Date _____

Made By _____

Cost Code	Description	INVOICED			Quantity		Committed			Project Final Cost				Budgets				Projection	
		Lab. $	Mat. $	Sub. $	Invoiced	Work Completed	MAT $	SUB $	QTY	LAB $	MAT $	SUB $	QTY	LAB $	MAT $	SUB $	QTY	+	-

FIGURE 5.14 MONTHLY COST REPORT

COMPANY IDENTIFICATION

Forecast Summary Statement of Income and Expenses (in 1000's)

	1976			1977			
	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Revenue on Contracts							
Profits on Contracts							
General Expenses							
Net Income from Operations							
Profit Sharing							
Amortization of Goodwill							
Capital Gains							
Net Income before Income Taxes							
Income Taxes							
Net Income							
	(October) Forecast						
Closing Cash Balance							

FIGURE 5.15 A FORECAST SUMMARY STATEMENT OF INCOME AND EXPENSES

COMPANY IDENTIFICATION

Cash Flow Projection

	Jan	Feb	Mar	Apr	May	Jun
CASH BALANCE BEGINNING OF MONTH						
Source of funds (cash receipts)						
Capital						
Retained Earnings						
Depreciation						
Deferred Income Taxes						
Progress billings on uncompleted projects, less costs and accrued profit or loss						
Application of funds (Cash Disbursements)						
Holdbacks receivable, less payable						
Contract Deposits						
Fixed Assets						
Equity in Joint Ventures						
Monthly P/R Financing						
Accounts Receivable outstanding more than 30 days						
FINANCING REQUIREMENTS -- END OF MONTH						

FIGURE 5.16 A SIX-MONTH COMPANY'S CASH FLOW PROJECTION

COMPANY IDENTIFICATION

Accounts Receivable as of _____

CLIENT	Total	Current	2 Months	3 Months	4 Months	More than 4 Months	REMARKS

FIGURE 5.17 A STATEMENT OF ACCOUNTS RECEIVABLE

COMPANY IDENTIFICATION

Holdbacks Receivable as of _____

CONTRACT NUMBER	CLIENTS	AMOUNT		EST. DATE RECEIVABLE	REMARKS

FIGURE 5.18 A STATEMENT OF HOLDBACKS RECEIVABLE

COMPANY IDENTIFICATION

Name of Project _____ Financial Forecast Summary Date of Cost Report _____

Job Number _____ Date of This Report _____

Code Series	Description	Gain or Loss This Report	Gain or Loss Last Report	Change	Remarks
0 - 99	General Conditions				
100 - 199	Excavation, Etc.				
200 - 299	Concrete				
300 - 399	Form Work				
400 - 499	Masonry				
500 - 599	Carpentry				
600 - 699	Machinery Supply				
700 - 799	Machinery Installation				
800 - 899	Piping				
900 - 999	Sub-Trades				
1000 - 1999	Extra Work - L.S.C.				
2000 - 2999	Field Charges				
3000 - 3999	Time & Material Changes				
4000 - 4999	Est. Omissions - Claims				
5000 - 5999	Contra-Charges				
TOTAL CODE SERIES					
TENDER PROFIT					
TOTAL					
ADJUSTMENTS					
TOTAL					
CONTINGENCY					
REVISED TOTAL					

AMOUNT REPORTED: _____

FIGURE 5.19 FINANCIAL FORECAST SUMMARY

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

This study demonstrates the need for the development of improved reporting practices for the medium-sized contractor. As a first step toward meeting this need, an attempt has been made to:

(a) document the extent of the information presently collected and processed by the firm with respect to internal reporting and external reporting needs;

(b) document the flow of activities within the firm required for the preparation of internal and external reports;

(c) document the information requirements of the contractor's bank, surety and clients and the evaluation processes employed by these external parties; and

(d) assess the strengths and weaknesses of present contractor reporting practices, as viewed by the bank, the surety and the contractor himself.

In order to satisfy these objectives, extensive interviewing was done with contractors, sureties, and banks. A detailed study of the literature was also performed.

If contractor reporting practices are to be improved, reporting systems which are compatible with the contractor's mode of operation must be developed. Central to this development process is information pertaining to the way in which firms are organized, the qualifications and capabilities of their staff, the type of work performed and so forth. Objectives (a) and (b) focus on these information needs. As an initial step in satisfying these objectives, a detailed case study of a sophisticated medium-sized contractor was made. Included in this study is an analysis of the manner in which the company reports to external agencies such as the bank, surety and client as well as the internal reporting procedures required for effective project and overall company control. The manner in which this company operates comes close to the textbook ideal, and it should not be construed as typical of the medium-sized contractor. Nevertheless, the information obtained provides valuable insights into how the contractor is structured and operates.

Pursuit of objective (c) provided valuable information regarding how external parties such as the surety and bank view the contractor. Six criteria were identified as being central to the evaluation process employed by the bank and surety. These criteria are capacity, capital, character, collateral, cost control and conditions. A detailed examination of each of these criteria was made and a partial basis established for determining what and, to a certain extent,

how improvements should be made in the firm's management practices and strengths in general and in the present internal and external reporting practices of the contractor in particular.

Several aspects of current contractor reporting practices were singled out for improvement. They include:

(i) the need to integrate the estimating, planning and cost accounting systems;

(ii) the need to perform cash flow planning, both for individual projects and for the overall affairs of the company; and,

(iii) the need for improved cost control systems and, in particular, the need for collecting and processing data pertaining to labour productivity.

6.2 RECOMMENDATIONS

The following observations are offered for those pursuing further research work on contractor reporting systems.

1. Attention should be focused on obtaining industry participation, particularly in regard to providing detailed information as to how various firms are structured and operate so as to identify the attributes which a reporting system must have in order to be compatible with a firm's mode of operation. Various mechanisms should be identified and tried for obtaining this information.

Questionnaires tend to be too unreliable and are not taken seriously. Interviewing, while somewhat frustrating for all concerned, can be very effective if both parties are well-prepared. However, those interviewed must be willing to devote considerable time to the process, which is difficult to do given their heavy workloads.

2. The use of cash flow analysis as a basis for estimating, planning and control should be investigated. If a way can be found to unify these processes, more effective project and company control could result. Any system developed must reflect the manner in which the contractor operates if it is to be adopted.

3. The use of computer-based reporting systems should be reassessed. The advent of the mini-computer with its various advantages as compared to service bureaus may result in changed attitudes towards use of the computer by the contractor.

APPENDIX I

COMPLETED CONTRACTING CO., INC.
BALANCE SHEET
(COMPLETED CONTRACT BASIS)
NOVEMBER 30, 19x5

ASSETS

CURRENT ASSETS:			
CASH IN BANKS			$ 23 989 78
ACCOUNTS RECEIVABLE - REQUISITIONED -	(SCHEDULE "A-1") *		573 023 08
ACCOUNTS RECEIVABLE - NOT REQUISITIONED			1 159 34
DUE FROM EMPLOYEES	(SCHEDULE "A-2") *		8 039 99
LOANS RECEIVABLE			83 83
INVENTORY - MATERIALS (AS SUBMITTED)			6 761 56
DEPOSITS - BIDS, PLANS AND SPECIFICATIONS	(SCHEDULE "A-3") *		27 540 00
PREPAID INSURANCE			7 139 23
PREPAID TAXES AND EXPENSES			349 21
DUE FROM VENDORS	(SCHEDULE "A-4") *		1 088 72
TOTAL CURRENT ASSETS			$ 649 104 84
FIXED ASSETS: (AT COST)	(SCHEDULE "A-5") *		
LAND		$ 3 500 00	
BUILDING AND IMPROVEMENTS		20 280 59	
AUTOS AND TRUCKS		17 913 02	
GARAGE BUILDING		6 138 86	
EQUIPMENT		4 429 90	
FURNITURE AND FIXTURES		7 971 97	
AIR CONDITIONERS		1 579 85	
TOTAL		61 803 19	
LESS: ACCUMULATED DEPRECIATION		38 653 62	
TOTAL FIXED ASSETS (BOOK VALUE)			23 150 57
OTHER ASSETS - DEPOSITS			425 00
TOTAL ASSETS			$ 672 740 41

LIABILITIES AND CAPITAL

CURRENT LIABILITIES:			
ACCOUNTS AND SUB-CONTRACTORS PAYABLE	(SCHEDULE "A-6") *		$ 334 546 11
FEDERAL INCOME TAX ACCRUED AT NOVEMBER 30, 19			5 206 34
ACCRUED EXPENSES			28 726 21
NOTES PAYABLE - BANK			6 463 02
DUE TO CUSTOMERS	(SCHEDULE "A-7") *		17 796 94
PAYROLL TAXES AND DEDUCTIONS WITHHELD			8 817 65
DUE TO PROFIT SHARING TRUST			20 000 00
BILLINGS ON UNCOMPLETED CONTRACTS - (SCHEDULE "A-8")		$ 1 166 930 56	
LESS: COST OF CONTRACTS IN PROCESS - (SCHEDULE "A-8")		1 144 018 68	
DUE TO JOINT VENTURE			22 923 88
OFFICERS' SALARIES PAYABLE			10 677 44
			37 200 00
TOTAL CURRENT LIABILITIES			$ 483 456 89
LONG-TERM LIABILITIES:			
LOANS PAYABLE - OFFICERS			44 131 98
TOTAL LIABILITIES			$ 527 588 87
CAPITAL:			
CAPITAL STOCK - ISSUED AND OUTSTANDING		$ 75 000 00	
RETAINED EARNINGS	(EXHIBIT "C")	70 151 54	
TOTAL CAPITAL			145 151 54
TOTAL LIABILITIES AND CAPITAL			$ 672 740 41

* SCHEDULES REFERRED TO ARE NOT REPRODUCED.

COMPLETED CONTRACTING CO., INC.
STATEMENT OF INCOME
(COMPLETED CONTRACT BASIS)
FISCAL YEAR ENDED NOVEMBER 30, 19--

COMPLETED CONTRACT SALES - PER SCHEDULE "B-1"		$ 2 237 677 00
COST OF COMPLETED CONTRACTS - PER SCHEDULE "B-1"		1 949 896 99
TOTAL GROSS PROFIT EARNED ON CONTRACTS - PER SCHEDULE "B-1"		$ 287 781 00
LESS: DIRECT CONTRACT OVERHEAD EXPENSES:		
ENGINEERING SALARIES	$ 63 406 94	
BLUEPRINTS AND DRAFTING SUPPLIES	422 99	
LICENSES AND PERMITS	527 18	
TRAVEL	2 347 41	
MISCELLANEOUS COSTS	1 456 16	
TOOLS EXPENSE	269 22	
SUPERVISION SALARIES	2 459 63	
ESTIMATING EXPENSE	261 71	
CONSULTING FEES	192 90	
TOTAL GENERAL DIRECT CONTRACT OVERHEAD EXPENSES - (BEFORE APPLICATION OF UNDER-APPLIED PAYROLL CHARGES AND UNDER-APPLIED TRUCK EXPENSES AND TRUCK DEPRECIATION)	$ 70 334 23	
ADD: UNDER-APPLIED PAYROLL CHARGES	1 387 64	
UNDER-APPLIED TRUCK COSTS	485 46	
TOTAL GENERAL DIRECT CONTRACT OVERHEAD EXPENSES		72 057 33
GROSS PROFIT EARNED ON OPERATIONS		$ 215 723 67
SELLING EXPENSES:		
BIDDING EXPENSES	$ 582 60	
SALES PROMOTION	3 215 87	
CHRISTMAS EXPENSES	601 22	
AUTOMOBILE AND TRAVEL EXPENSES	6 229 73	
BUILDING REPORTS AND SUBSCRIPTIONS	2 096 30	
ADVERTISING	300 00	
TOTAL SELLING EXPENSES		13 025 71
SELLING PROFIT		$ [illegible]
GENERAL AND ADMINISTRATIVE EXPENSES:		
GENERAL REPAIRS	$ 385 06	
OFFICE EQUIPMENT REPAIRS	600 33	
CLEANING	577 60	
HEAT, LIGHT AND POWER	954 19	
GROUND MAINTENANCE	449 80	
DEPRECIATION ON FIXED ASSETS	1 598 44	
AUTO AND TRAVEL	409 18	
INTEREST AND BANK CHARGES	1 534 97	
PAYROLL TAXES	1 906 35	
TELEPHONE AND TELEGRAPH	35 591 39	
STATIONERY AND PRINTING AND OFFICE EXPENSE	2 832 10	
PROFESSIONAL SERVICES	5 988 00	
OTHER TAXES	6 345 32	
INSURANCE	10 110 26	
POSTAGE	876 19	
OFFICE SALARIES	21 681 63	
OFFICERS' SALARIES	112 200 00	
DUES AND SUBSCRIPTIONS	84 10	
DONATIONS	5 00	
TOTAL GENERAL AND ADMINISTRATIVE EXPENSES		173 339 91
OPERATING PROFIT (FORWARDED)		$ 31 458 05
OTHER INCOME:		
POST-CLOSING INCOME - SCHEDULE "B-2"	$ 10 100 00	
PURCHASE DISCOUNTS	2 005 00	
MISCELLANEOUS INCOME	11 50	
COMMISSION INCOME	159 11	
TOTAL OTHER INCOME		12 265 21
NET INCOME FOR THE FISCAL YEAR (BEFORE PROVISION FOR THE PROFIT-SHARING TRUST CONTRIBUTION AND FEDERAL INCOME TAX)		$ 43 824 95
PROVISION FOR PROFIT-SHARING TRUST CONTRIBUTION		20 000 00
NET INCOME FOR THE FISCAL YEAR (BEFORE PROVISION FOR FEDERAL INCOME TAX)		$ 23 824 95
PROVISION FOR FEDERAL INCOME TAX		5 206 34
NET INCOME FOR THE FISCAL YEAR (AFTER TAXES)		$ 18 618 61

PROFIT AND LOSS STATEMENT BASED ON COMPLETED-CONTRACT METHOD [29]

APPENDIX II

RATIO / YEAR	After Tax Profits To Sales (%)	After Tax Profits To Equity (%)	Current Assets To Current Liabilities	Fixed Assets to Equity (%)	Collection Record (Days)	Revenue to Equity	Current Liabilities To Equity (%)	Total Liabilities To Equity (%)
1967	2.60	15.96	1.47	65.2	73	6.13	134.3	196.5
1968	2.29	14.00	1.33	54.6	79	6.09	168.9	209.9
1969	2.87	18.70	1.44	43.3	75	6.50	156.6	175.3
1970	2.22	14.57	1.35	48.5	69	6.55	153.7	166.4
1971	2.18	12.62	1.38	44.6	75	5.78	153.7	168.0
1972	2.18	12.62	1.38	44.6	75	5.78	153.7	168.0
1973	1.57	9.66	1.36	47.9	70	6.17	154.1	176.0
1974	2.21	13.73	1.35	44.2	74	6.20	176.4	193.6

C. SPECIAL TRADE CONTRACTORS

FINANCIAL RATIOS FOR CANADIAN SPECIAL TRADE CONTRACTORS
1967-1974 [30]

RATIO / YEAR	After Tax Profits To Sales (%)	After Tax Profits To Equity (%)	Current Assets To Current Liabilities	Fixed Assets to Equity (%)	Collection Record (Days)	Revenue to Equity	Current Liabilities To Equity (%)	Total Liabilities To Equity (%)
1967	1.98	9.44	1.02	111.3	61	4.75	113.3	202.7
1968	2.06	10.30	0.99	114.1	84	5.00	174.5	237.2
1969	2.14	11.32	1.26	122.3	83	5.28	143.8	188.8
1970	2.66	12.62	1.25	109.1	79	4.75	131.2	161.0
1971	2.27	8.29	1.26	94.0	69	3.65	115.7	144.1
1972	2.27	8.29	1.26	94.0	69	3.65	115.7	144.1
1973	2.27	9.55	1.30	98.9	62	4.21	117.7	148.4
1974	3.02	14.10	0.80	97.8	55	4.67	190.0	219.9

B. HIGHWAY, BRIDGE AND STREET CONSTRUCTION

FINANCIAL RATIOS FOR CANADIAN HIGHWAY, BRIDGE AND STREET CONSTRUCTION CONTRACTORS 1967-1974 [30]

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